



BUSINESS TECHNOLOGY LEADERSHIP

WIRELESS

How one mid-market company got the paper out of its warehouse

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SIMULATION SOFTWARE

A new way to accelerate application development

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IT Builds a Better

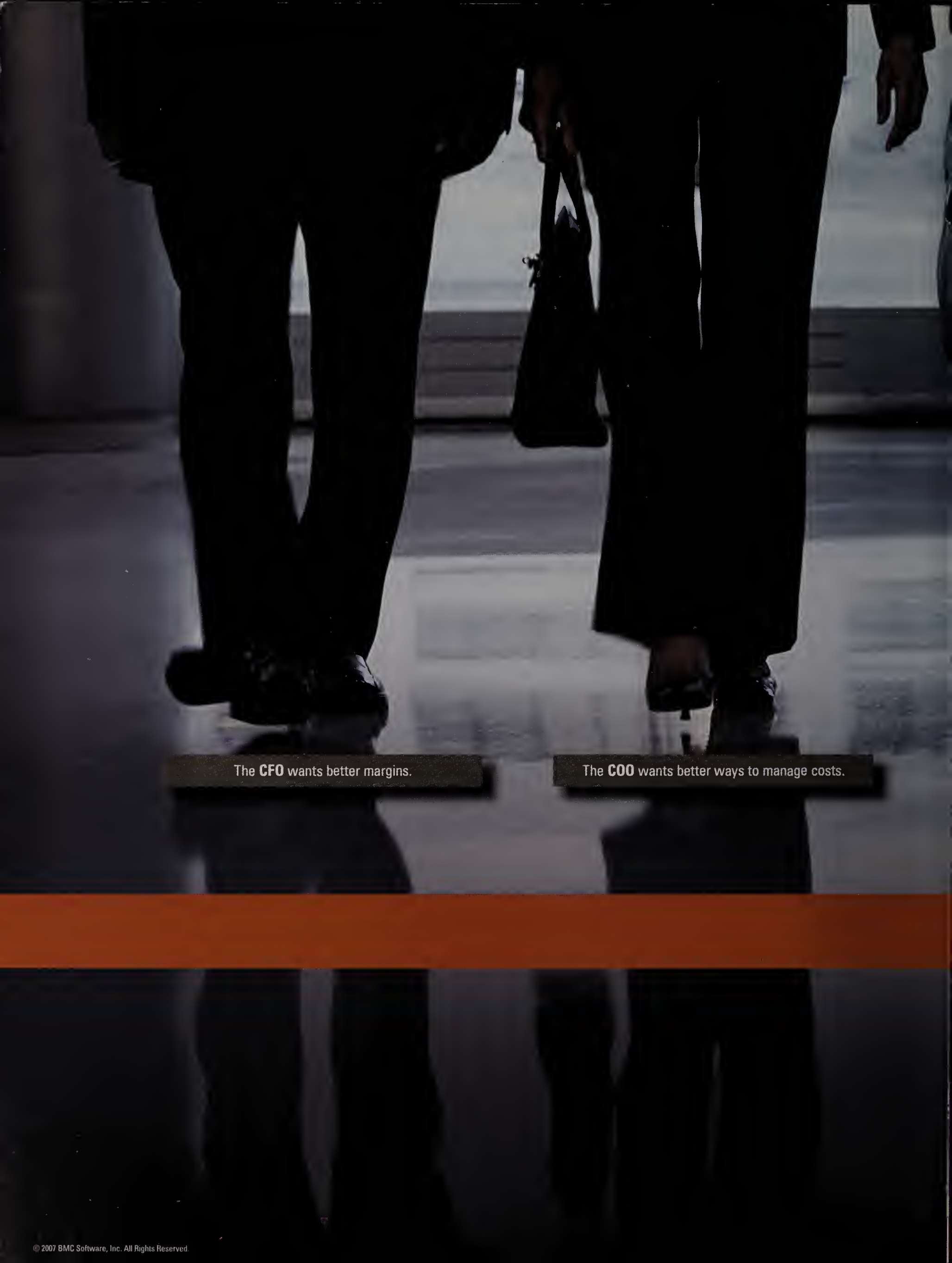


SPECIAL
REPORT ON
INNOVATION

Begins on
Page 34

Need new ideas to **energize** your enterprise? Find new ways to help your people **collaborate**. **P&G** and **MasterCard** did. You can too.

BY CHRISTOPHER KOCH

A black and white photograph showing the lower half of two people walking on a highly reflective surface. The person on the left is wearing dark trousers and dark shoes. The person on the right is wearing dark trousers and dark shoes, and is carrying a dark bag. Their reflections are clearly visible on the glossy floor. The background is blurred, suggesting an indoor setting with large windows or a modern architectural space.

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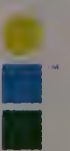
Where do your IT assets go when you dispose of them?

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OUTSOURCING Even as offshore outsourcing has grown and matured, best practices have been hard to isolate and even harder to find. Now, two top academics have aggregated offshoring experiences and reveal the principles that should guide CIOs. **By Stephanie Overby**

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MID-MARKET | WIRELESS Dorfman Pacific needed to grow, so it needed to get rid of the paper processes that held it back. Let its experience be your guide. **By Thomas Wailgum**

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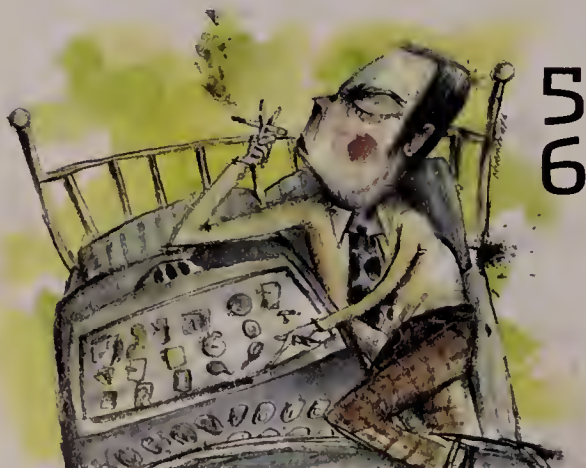
CAREER Mapping out priorities when starting a new job can ease stress and help you hit the ground running.

By Susan Cramm

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CIO Online

[HIRING]

The Myth of Expensive Labor

No matter how careful you are, no matter how sophisticated or "scientific" the process, says blogger Jerry Gregoire, hiring is a crapshoot. That's especially true in IT, where skills are hard to assess based on the alphabet soup of projects, tools and programming languages. But strangely, hiring kids fresh out of college is far less complicated and risky than you might think. Gregoire shares his rules. See if you agree.

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[CAREER]

UNBALANCED WORKLOAD

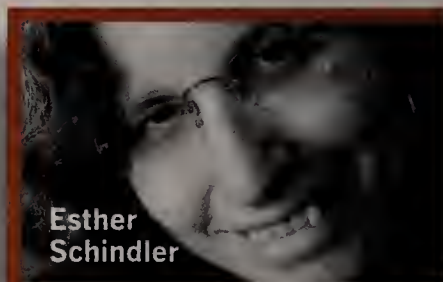
You want to be a team player but the long hours and stress are starting to burn you out. Don't ignore the problem. Here are six tips from various experts on how to broach the subject with your boss.

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PREPPING GEN-X

It won't be long now before the baby boom generation says goodbye to the workplace and hello to the Florida golf courses. But some Gen X-ers have gotten short shrift when it comes to leadership development training from the boomers. For advice on how to prepare yourself for the challenges headed your way when they retire, read Deborah Gilburg's "Stepping Up to the Leadership Plate."

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Esther Schindler

[MANAGEMENT]

YOU'RE THE BOSS

Got management headaches? In one of CIO's newest blogs, **You're the Boss**, Esther Schindler delves into the dilemmas that come with the territory of being in charge.

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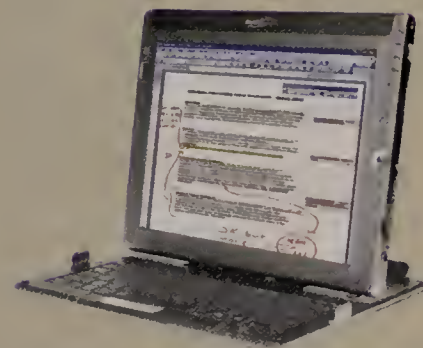
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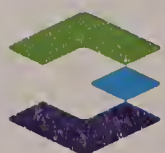
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trendlines

EDITED BY LAURIANNE McLAUGHLIN

NEW * HOT * UNEXPECTED

New Ways to **Save** on **Virtualization**

PRICE WARS In 2006, many enterprise IT groups saw the potential in virtualization, rushed to consolidate servers and subsequently propelled VMware software to a market-leading spot. As 2007 begins, VMware's prices are under attack, just as more CIOs look to virtualization to control server and storage sprawl and tame data center power costs.

For starters, VMware rivals XenSource and Virtual Iron have launched new open-source alternatives, undercutting VMware on price. Also, new processors, such as IBM's Power 5 and upcoming Power 6 chips, and new operating systems have virtualization capabilities built in, negating the need for some additional software, says Clay Ryder, president of The Sageza Group. Sun Microsystems' Solaris 10 OS includes a virtualization

feature it calls Containers. Microsoft is expected to release a beta version of Windows Virtual Server in the first quarter of 2007 and ship it a year later.

That's good news: As virtualization features become part of the hardware or the OS, software providers will have to offer useful extra features, Ryder says, such as automated new software testing or security patch management.

Virtual Iron introduced Version 3.1 of its virtualization platform in December for a license price of \$499 per socket—compared to \$2,875 per socket for a comparable VMware license. XenSource also introduced new virtualization products at sub-\$1,000 prices.

Both XenSource and Virtual Iron build their proprietary products on top of the open-source Xen platform for virtualization hypervisors. (A hypervisor lets a computer run multiple operating systems at once.) VMware's products are not based on open source.

Meanwhile, middleware vendor BEA Systems is making its own cost-cutting move. In the first half of 2007, BEA plans to

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Project Makes Web More Accessible to the Blind

WEB READERS When Massachusetts' government decided to use Open Document Format (ODF) as the default document file format throughout its agencies, a key concern was that ODF would not allow the visually impaired to use assistive computer technologies.

IBM recently announced it has helped solve that problem, developing technology that lets applications based on ODF communicate well with products that the blind use to access visual information on PC screens.

In an effort dubbed Project

Missouri, after the "Show-Me State," IBM has developed a set of application programming interfaces (APIs) collectively called IAccessible2. These APIs make it easy for visuals in applications based on ODF and other Web technologies to be interpreted by screen readers that reproduce information verbally, IBM says.

In the past, screen-reading technology has struggled to keep up with cutting-edge development and file formats such as ODF, Ajax and DHTML (dynamic hypertext markup language),

says IBM spokesman Ari Fishkind.

IBM has donated its work on Project Missouri to the Free Standards Group, a nonprofit that promotes open-source software. Other companies working on IAccessible2 development include Oracle, SAP and Sun.

Mozilla intends to integrate IAccessible2 into its Firefox Web browser.

ODF is currently in competition with Microsoft's Open XML file format (the basis of Office 2007) to become the industry's default format.

—Elizabeth Montalbano

Can Humans Build CONSCIOUS Machines?

ARTIFICIAL INTELLIGENCE Will machines ever be capable of human intelligence? That's ultimately a matter for philosophers, not scientists, to decide, two of today's top technology minds agreed during a recent debate at MIT.

Inventor Ray Kurzweil and Yale University Professor David Gelernter debated the question, "Are we limited to building superintelligent, robotic 'zombies,' or will it be possible for us to build conscious, creative, even 'spiritual' machines?" The debate celebrated the 70th anniversary of Alan Turing's paper "On Computable Numbers," widely held to be the theoretical foundation for the development of computers.

In a separate 1950 paper, Turing suggested a test to determine "machine intelligence." In the Turing Test, a human judge has a conversation with another human and a machine, not knowing whether responses come from the human or the machine. If the judge cannot determine where the responses come from—the human or the machine—then the machine is said to "pass" the test and exhibit intelligence. The test itself is the source of ongoing dispute.

But Kurzweil and Gelernter were focused on how Turing's test could be applied. Kurzweil's position: Machines will, in fact, some day pass the Turing Test. Modeling of parts of the brain is already leading to the ability to replicate certain human functions in a machine, he said.

"We'll have systems that have the suppleness of the human brain," Kurzweil said. But current software and computing power aren't up to the task, so look out 20 or so years, he added.

Humans will recognize the intelligence of such machines because "the machines will be very clever and they'll get mad at us if we don't," Kurzweil joked.

Gelernter smiled at that, but he also shook his head. His position: Logically, any machine that is programmed to mimic human feelings (an aspect of consciousness) is programmed to lie—because a machine cannot feel what a human feels.

Kurzweil noted that recently a computer simulated protein folding, something that was believed to be impossible for a machine. Gelernter noted the simulation of the folding stopped there.

"You can simulate a rainstorm and nobody gets wet," he said. —Nancy Weil

Virtualization

Continued from Page 9

release WebLogic Server Virtual Edition (WLS-VE), a version of its Java application server that includes Liquid VM—a BEA-specific Java Virtual Machine that lets Java applications run directly on a hypervisor without requiring an operating system to be present. This will let users substantially reduce the amount of computer power, lowering the hardware costs per application, says Guy Churchward, vice president and general manager of the Java Runtime Products Group at BEA Systems. Initially, Liquid VM will work only with VMware's ESX Server hypervisor.

Analysts advise CIOs planning for virtualization in 2007 to think strategically, not just tactically.

"To really make virtualization work you want to do it so end users access capability, not just specific machines," Ryder says. "That's only going to be possible if you take a strategic approach," he says, noting that virtualization needs to be applied to storage, networking and the introduction of new software, not just servers.

Mike Williams, CIO for the Defense Contract Management Agency (DCMA), learned a lesson about thinking strategically when he did a virtualization project in 2006. (The DCMA, a federal Department of Defense agency, places contract managers inside companies fulfilling defense contracts for weapons systems, jets, military equipment and parts.) Williams deployed VMware, reducing the agency's number of servers to 160 from 560 and the number of data centers to three from 17. But that move taxed the WAN when all the network traffic converged on the three data centers. His advice: Optimize the WAN first.

Still, Williams likes the results. Before virtualization, DCMA replaced about one-third of its 560 servers annually at a cost of about \$2 million, Williams says; virtualization cut that expense to \$560,000.

—Robert Mullins and China Martens

TRENDLINES



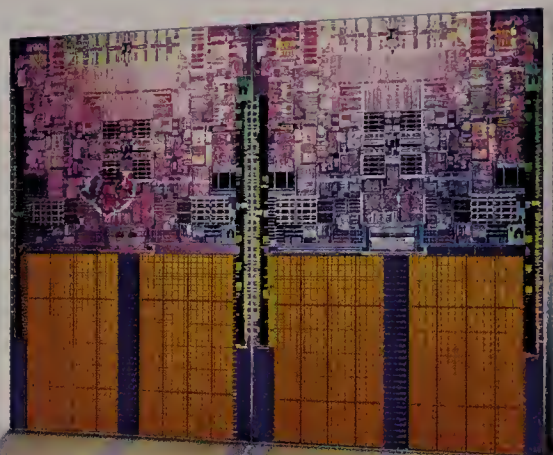
Media Mania



Wondering where all your free time went? In 2007, adults and teens will spend almost **five months—or 3,518 hours—** watching TV, browsing the Net, reading newspapers and listening to music players. **Consumer spending** on media in 2007 will be **\$936.75** per person.

SOURCE: U.S. Census Bureau's "Statistical Abstract of the United States: 2007" and communications industry forecast





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Targeting Customers in Second Life

VIRTUAL BUSINESS Residents of the virtual world Second Life act a lot like they do in the real world—they shop, they gamble, they hang out at clubs, and they don't like it when companies assault them with marketing efforts. If you're trying to help your company or your customers market products or services in Second Life, where more than 84 million real-world dollars changed hands in 2006, beware: Old-world advertising wisdom won't play. For starters, don't expect to make a splash with onetime efforts.

"Marketers like to be in on the newest trend. Some of them missed the YouTube/MySpace wave, and Second Life is their opportunity to get in on something cool," says Marc Girolimetti, executive director of Green Grotto Studios. His interactive services agency helps companies design and create a brand presence in the new virtual medium. "The biggest mistake people make is thinking that because they are a well-known, global brand, people will flock to them," he says.

Users don't want to be sold to, they want an experience, he says. "Think long-term," says Girolimetti. "Refresh your content daily." Also, if you're a retailer, have a virtual staff interact with users who enter your virtual establishment. Taking part in the community is essential, he says.

Second Life, launched in June 2003 and recently surpassing 2 million registered users, also gives companies a place to try new ideas and prototype products with online residents. Companies can track how people interact with their products. If you visit the Second Life Dell store, you can build your own computer—and Dell can track what's popular in its in-world factory.

The best way for a company to interact with residents? Give an event they will remember, says Girolimetti: He recently promoted a Warner Home Video DVD release with an in-world party that included DJ performances and a media room that streamed movie clips, in addition to traditional banner promotions.

—Margaret Locher



Eastern Europe New Outsourcing Hot Spot

OFFSHORING Eastern Europe has the potential to be the next outsourcing hotspot, says a December 2006 study by McKinsey. According to the report, "The Overlooked Potential for Outsourcing in Eastern Europe," this region currently holds less than 1 percent of the world's offshore IT market, but by the end of 2008, offshoring to Eastern Europe could triple, to more than 130,000 jobs. Wages in this location resemble those found in India today, and are not expected to rise significantly (whereas India's wages may). Wage inflation in Eastern Europe moves at a very slow pace, the report states. Other benefits of the area include its low-risk profile and cultural proximity to Western Europe, as well as less expensive labor than Western Europe.

The report encourages companies to explore smaller cities, instead of jumping into locations such as Budapest, Krakow and Prague. Almost 50 cities in Eastern Europe have large universities that would allow employers to tap into a ready pool of skilled graduates, McKinsey notes. These midsize cities in Romania, Russia and Bulgaria are less likely to have offshoring activity already under way, so the "labor cost advantage is more likely to remain attractive for the next decade," according to the report. One example: Katowice, a city in Poland, has 7,400 university graduates who have suitable talent.

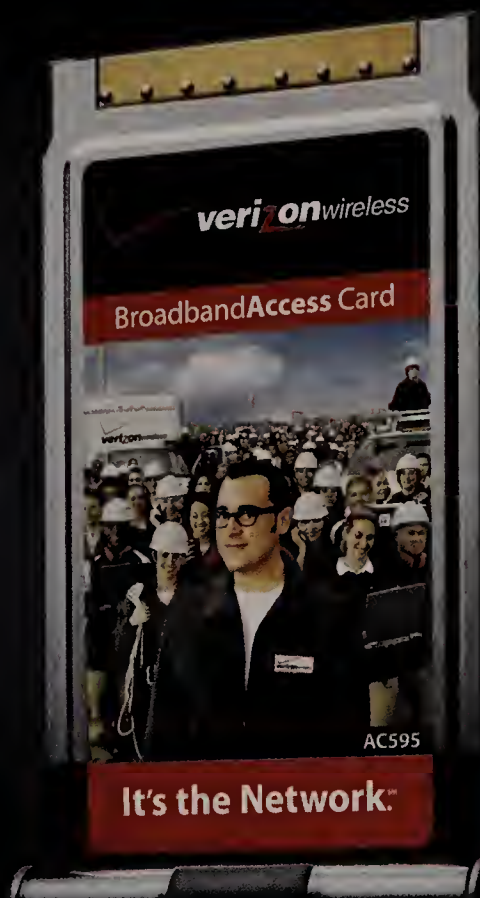
However, the benefits of outsourcing to this region may not be as substantial for U.S. companies as they are for European corporations. Companies in Western Europe can benefit the most from outsourcing to Eastern European countries because they are more likely to find compatible language capabilities in nations like Hungary and Poland than they would in Southeast Asia, McKinsey's report states. And McKinsey's research shows that Western European companies' need for offshoring increased by 50 percent in the past two years.

As with any potential offshoring location, you must weigh the reliability of the infrastructure and political stability of Eastern European countries, the report cautions. Another concern: The workforce could shift to a competitor that decides to set up shop. However, having a portfolio of offshoring locations reduces potential risk.

—M.L.

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To Shred or NOT to Shred...

PRIVACY When details of Hewlett-Packard's boardroom leaks investigation surfaced, many people were shocked—shocked!—to hear that HP may have hired investigators to go through individuals' trash. But Dumpster diving is a favorite technique, and it's often legal, which creates the need to shred wisely. Here are a few best practices you can share with colleagues.

» **Trash is not inherently private.** In 1998, the Supreme Court ruled that Americans do not have a right to privacy regarding trash. The Economic Espionage Act of

1996, which made it a federal offense to steal trade information, doesn't protect firms that fail to take reasonable steps to protect data.

» **Keep documents only as long as needed.** Especially in regulated industries, your company should have policies detailing retention periods and disposal instructions for various document types.

» **Don't shred documents out of turn—such as when your firm prepares for a suit.**

» **Customer or employee information** that contains names, Social Security

numbers, dates of birth, account balances or health conditions should always be shredded.

» **Shred documents that could help the competition.** Customer lists, sensitive pricing information, strategic planning documents and trade secrets should never just be tossed.

» **Be diligent with information from consumer reports.** The Fair Credit Reporting Act protects credit reports

and scores, plus reports relating to employment background, check writing history, insurance claims, residential or tenant history, or medical history. Handlers of this data face strict disposal guidelines.

» **Speak up if your shredding system is so onerous that people avoid it.** Companies have many options, from a \$40 cross-cut shredder to outsourced shredding services. —Sarah D. Scalet

A CTO Stint Teaches Future CIOs Well

ON THE MOVE Can a stint as a chief technology officer groom you for a future slot as a CIO? Yes, say executive recruiters, a CTO job can teach you not only about technology but also about strategy and alignment, and communication in the C-level suite.

In companies where the CIO plays a highly strategic role and focuses on building relationships with other executives, a CTO's charge is often to support the CIO by identifying the best technologies available to execute and enable business strategy, says Jim Bond, managing director of executive search firm



Jonathan Dodson



Tom Conophy

Horton International. "As a general rule, the CTO reports to the CIO," he says. At software firms, the reverse may apply.

For the two executives to work effectively together, the CIO has to regularly convey the business strategy and direction to the CTO; otherwise the CTO can't do his job. With consistent communication between the two execs, the CTO post can be a good training stop for aspir-

ing CIOs, says Bond. So if you pursue a CTO role, seek out a boss who collaborates well.

Several CTOs have moved into the CIO post recently. Among them: **Dave**

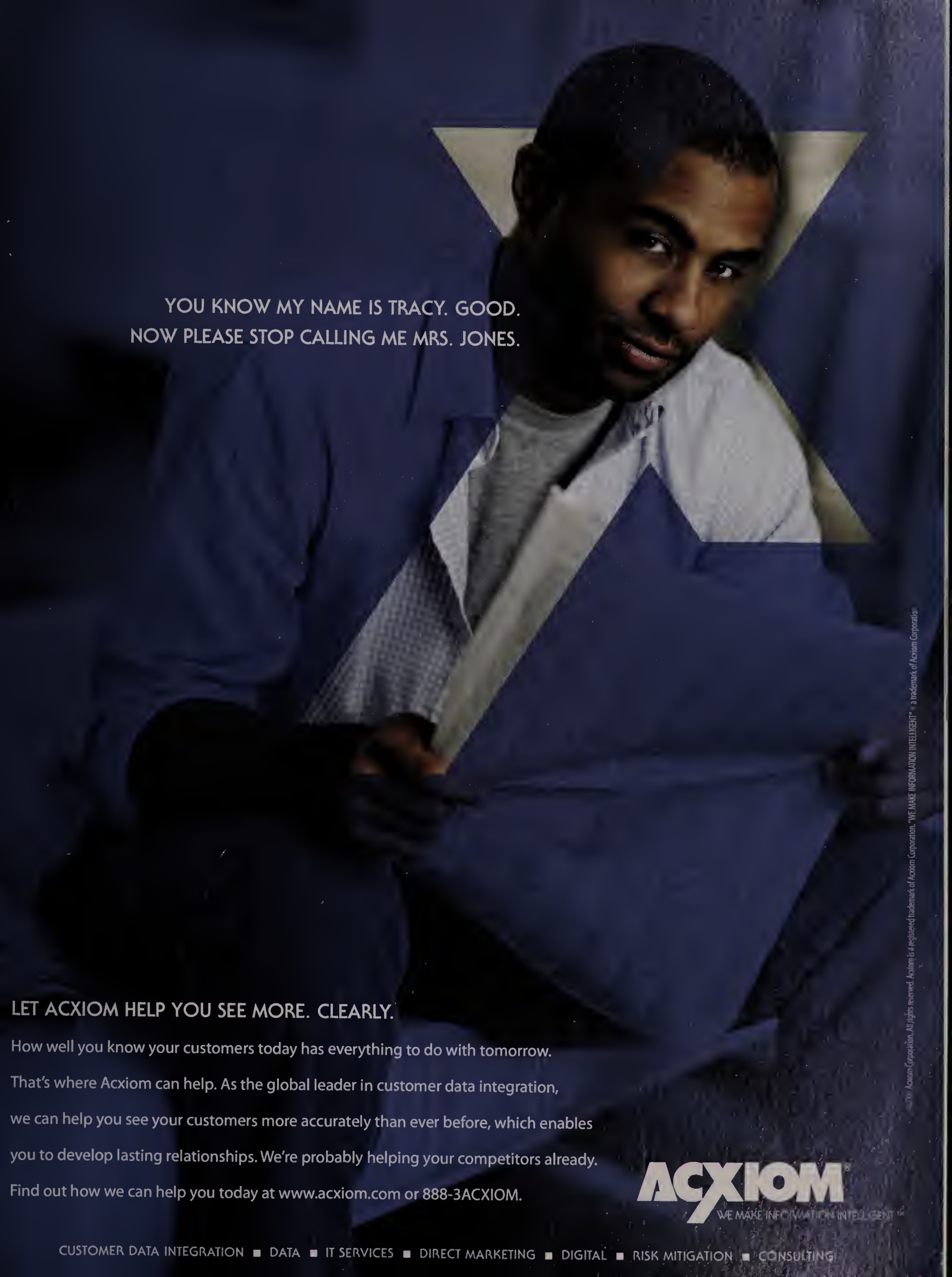
Egbert was promoted to CIO of insurance provider Markel Corp. in December 2006. Egbert succeeds and reports to former CIO **John Latham**, who was appointed senior VP of operations.

Also in December, Certain Software promoted **Jonathan Dodson** to CIO and hired **Michael Winner** as its new CTO. Winner reports to Dodson.

Raymond Ouellette landed the CIO role at Forbes.com in May 2006, after serving as Thompson Media's CTO. He's accountable to Forbes.com General Manager Michael Smith.

Last February, InterContinental Hotels Group named **Tom Conophy** CIO, reporting to CEO Andrew Cosslett. Conophy previously served as Starwood Hotels' executive VP and CTO. —Meridith Levinson

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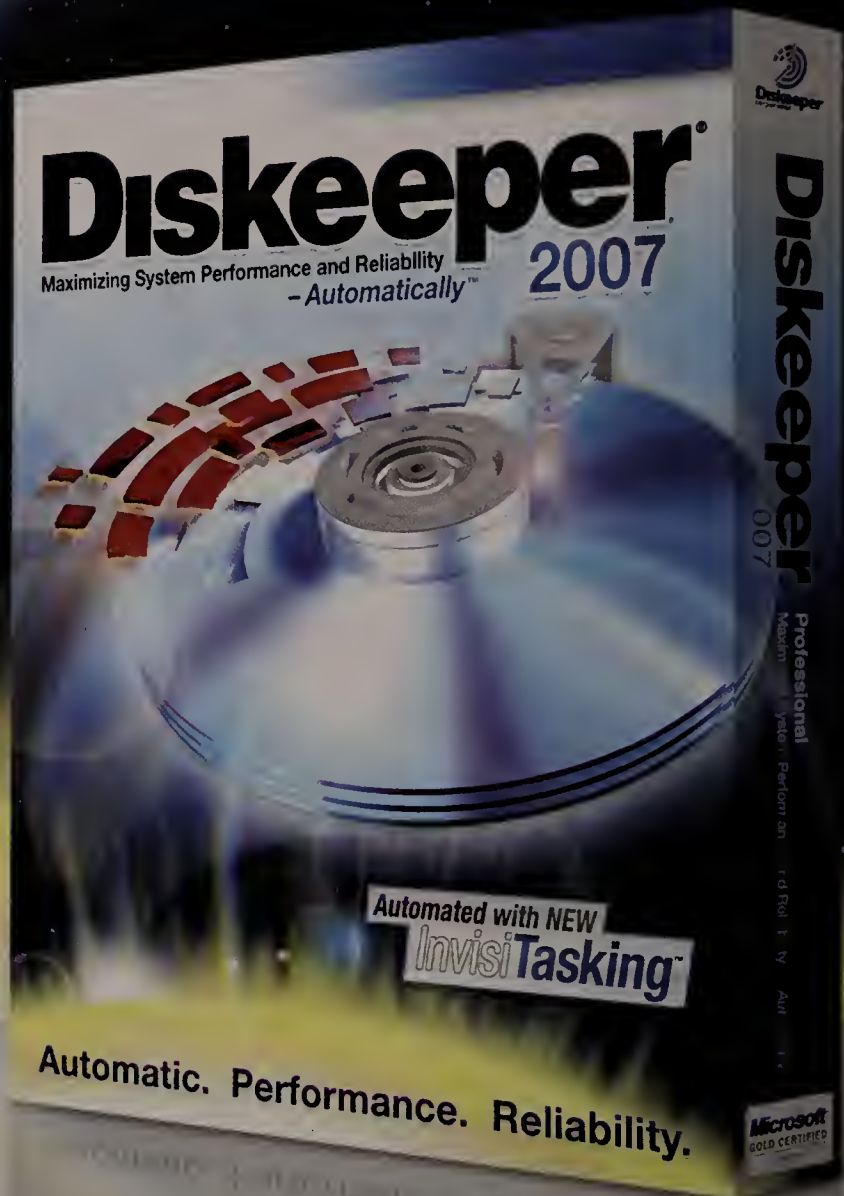
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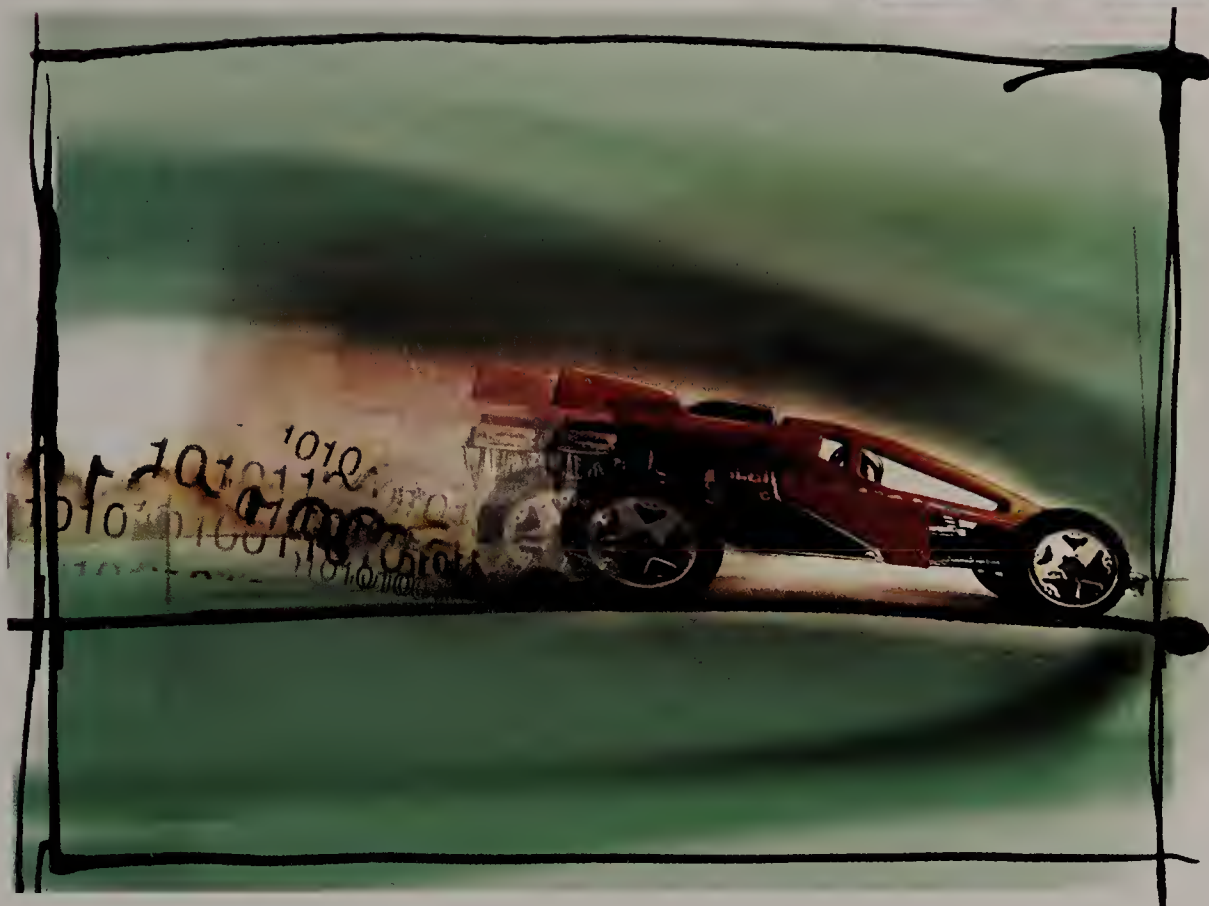
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ESSENTIAL

FROM INCEPTION TO IMPLEMENTATION—I.T. THAT MATTERS

technology

Edited by **Laurianne McLaughlin**
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Simulation software lets you speed up application development projects by using models. Early adopters have said goodbye to prototyping and gathering requirements on paper. And they're pretty happy about it.

Development In the Fast Lane

BY MICHAEL FITZGERALD

APPLICATION DEVELOPMENT | In 2003, Citigroup's mortgage lending group launched a new retail banking product and then found itself mired in what would become 8,000 hours' worth of software fixes and enhancements.

That result wasn't unusual, says Michael Chandler, director of user experience and product design in the consumer lending division of Citigroup's North American IT unit. So Citigroup decided to change its mode of operations for application development. One goal: improve the requirements definition stage and speed up prototyping, with the help of simulation software from iRise.

The results: After Citibank's mortgage division relaunched that retail application in November 2006, IT made just 120 hours of post-production changes, most of them minor. Chandler says that iRise clearly helped: "We've taken out paper-based prototyping and manual, text-based requirements, and moved it towards the electronic medium."

Welcome to the world of software simulation, an emerging area of application development tools. Don't think of flight simulators, though: Think of CAD/CAM tools that

“Paper prototyping is lengthy and it’s not connected to anything else. You prototype it and you throw it away.”

—Citigroup’s Michael Chandler, director of user experience and product design

eliminate paper-based tasks.

Tools like iRise “allow you to build the simulation of what you’re going to get at a really low cost,” says Carey Schwaber, an analyst at Forrester Research, who calls poor requirements definition the root cause of bad software. iRise claims that it can cut requirements time in half and cut reworking time by 75 percent, numbers that Schwaber says sound reasonable.

At a time when businesses are asking CIOs to help deliver innovative changes quickly, old-world application development schedules simply may not fly. Simulation tools, targeted mostly toward business analysts, offer a novel solution. They also fit in well with the agile programming trend.

Citibank Changes Tempo

But simulation software, intriguing as it may be, won’t be a Band-Aid you can just slap on your current process. To pick up the pace of its software development, Citigroup went after its root problem in defining project requirements, which involved various business partners just “throwing requirements over the wall,” Chandler says. Developers got a large list of functional specifications but lacked a sense of what the ultimate product should look like. Then, “when the production ver-

sion comes, you’ve got 10,000 hours of changes,” Chandler says.

So Citigroup adopted a user-centric design approach for all consumer mortgage lending products. Whether the ultimate users were employees or customers, the user needs helped define the requirements of the project.

Creating this culture in Citigroup IT was a big step forward, Chandler says, but IT found two big development inefficiencies remained—around prototyping and effective requirements gathering. As at most firms, prototypes came out of meetings where requirements were put down on paper. Models were also built on paper. “Paper prototyping is lengthy and it’s not connected to anything else. You prototype it and you throw it away,” Chandler says.

The firm had previously tried to build prototypes using Microsoft’s PowerPoint and Visio tools, as well as coding in HTML and XML. But these were kludgy, as were the results. About 18 months ago, Chandler

Model Behavior

Advice from the trenches on making the most of modeling software

Simulation software can add some welcome velocity to your application development efforts, but it’s not a bandage you can just stick onto the problem. You’ll also need to lay some groundwork with your people and examine internal processes—you won’t see the results you want. Here are some tips from early adopters:

- **Shift your culture.** Tools alone won’t fix a broken design process. Citibank had to start by rethinking its requirements definition process and leading a culture change to make sure business analysts designed with the software user’s needs in mind.
- **Train your analysts.** Prepare to invest time and money in order to get the tool in place. BMO Financial Group knew that if it didn’t train its analysts thoroughly in using simulation tools, they would not be able to effectively interpret the results with customers. “It’s not the tool which will solve the problem, it’s the process, and the quality of the people, their skill set,” says Jesse Hanspal, BMO’s director of development technology services.
- **Establish a performance baseline.** Develop metrics to show how your software development process worked before you started using the simulation tools. If you don’t have a measurement in place detailing your performance now, you won’t be able to measure genuine improvement.

—M.F.

started looking at simulation tools, settling on iRise, a product that makes it simple to build prototypes of software interfaces and collect the associated requirements. (Helpfully, another group in Citigroup IT had been using iRise with success, and Chandler was able to forecast potential time-savings with the tool based on that group’s experiences.) His team started with five licenses on a 90-day trial basis, using the tool on several types of development projects, including a Web-based job, a client-server effort and even a mainframe project. Today his group has 20 licenses in consumer lending and another 21 throughout other Citigroup divisions (and hosts the iRise server edition for other Citibank development groups.)

The iRise tool has helped Chandler’s group of 34 usability engineers (whom he describes as business analysts, in effect) to work about 42 percent faster at creating requirements specifications, Chandler says. For prototyping, they’re now work-



_INFRASTRUCTURE LOG

_DAY 33: Our information is siloed. Unmanageable. People can't access the latest info to make decisions. Gil's resorted to giving everyone access to everything all at once.

_Monitors now outnumber humans 18 to 1.

_DAY 36: It's clear to me. We need an IBM Information On Demand middleware solution. Info will be liberated from the silos—available when we need it, whatever the format. Accurate and in context. Now we can make smarter decisions and deliver real business value.

_Access is a beautiful thing.



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ing between 66 percent and 80 percent faster, depending on the application.

However, Chandler cautions that Citigroup's shift to user-centric design means that it's hard to say how much of the increased speed comes from iRise. "We spend more time on definition and design" than in the past, he says. Still, while he can't say that they've cut project time in half, "we have reduced our post-production enhancements and fixes."

Better Talks With Customers

At Bally Technologies, a leading maker of equipment for the gambling industry, another simulation tool has helped IT pick up the pace as the company strives to create its next generation of products. Bally's IT group adopted Serena Composer (originally made by Apptera) in February 2006 to help better define requirements in its application development process.

Ron Beck, director of software development at Bally, says that Composer is turning doubters into believers in the IT group, by improving communication between IT and its internal business-side customers.

"I can take the tool out to the customer, talk to them and model their process while we talk," says Beck. "We put a user interface around each of their various functions and then we can say, 'This is what you said, and here's an interface. Is this what you want?'"

The customer gives feedback while Beck, or more often a business analyst, is onsite. Beck or the analyst goes back to the software development team and the business team members who will be involved in developing the new product, and shows them the requirements and the model. At this point, they'll do a technical assessment, then start the project. Since Bally uses an agile programming environment with 30-day development cycles, this prototype process fits in comfortably.

Bally Technologies has not been using the tool, which costs \$3,000 per license, for long enough to have statistics on its ROI, Beck says. But he has his anecdotes from customer meetings, and he knows

that his quick prototypes get his documentation team started on manuals weeks earlier than was previously the case.

Requirements Revamp

At BMO Financial Group in Montreal, the IT group similarly hopes simulation tools can help improve its requirements process. BMO's Jesse Hanspal, director of development technology services, calls his challenge the "elephant problem," in reference to the old tale of blind men who each had their own interpretation of an elephant. Requirements development suffers from the same thing, he says: Marketing, IT, the project's users, the product managers, audit staff and other stakeholders all have their own perspectives. "The English language is better for prose and poetry than modeling," says Hanspal.

A simulation tool, on the other hand, can force people to speak the same language, by showing them a model of what they say they want, he says.

So BMO has begun using the Profesy tool from Sofea. (Profesy costs in the range of \$10,000 per license.) Hanspal says that Sofea helps him model entire software systems, to dynamically simulate what customers might see at a branch, for example. It will help reduce the number of software defects, he hopes, by improving the requirements process.

Hanspal's group is still in the early days of using Profesy, with just a few business analysts using it. Profesy has already sped up projects, Hanspal says, but he can't say by how much, partly because the company has only recently established a baseline of how it developed software previously.

Concurring with Citigroup's Chandler, Hanspal says that tools alone won't ensure good requirements definition. BMO has

Beat the Requirements Blues

For a link to "THE ROOT OF THE PROBLEM: POOR REQUIREMENTS," a Forrester Research report by analyst Carey Schwaber, go to the online version of this article at www.cio.com/020107.

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TOOLBOX

Simulation Software

What's inside the new modeling tools for application development? Here's a look at three early examples: iRise, Composer and Profesy.

iRise Studio, Shared Server: Studio, a sophisticated modeling tool, is the most advanced in the bunch today. Customers use it for requirements definition, prototyping and early usability feedback, among other things. The company's server software allows real-time collaboration and manages check-in/check-out of documents by various group members. Companion reader software lets business-side customers view models of applications.

Serena Composer: Lower-cost modeling tool, not quite as robust as iRise, lacks the collaboration and group tools. Recently added free reader software for its customers.

Sofea Profesy: Similar to Composer, Profesy offers modeling tools aimed at business analysts. Sofea's customers often focus on formalizing business processes and simulating how back-end systems will interact. Lacks free reader software. —M.F.

also developed a training program to improve the skills of business analysts—a smart investment since the most expensive problems in software development boil down to poorly defined requirements, Hanspal says. **CIO**

Michael Fitzgerald is a freelance writer based in Millis, Mass. To comment on this story, go to the online version at www.cio.com/020107.



_INFRASTRUCTURE LOG

_DAY 18: Everything is frozen. It's our processes. They're inflexible. We can't respond to change.

_Why did we lock ourselves in like this? Brrrrr.

_DAY 19: A way out. IBM WebSphere middleware for Business Process Management. It lets us streamline business tasks. We can test our processes before we roll them out and monitor performance once they're deployed, and reuse is easy because it's based on a service oriented architecture.

_Everything's unfrozen now. Wow, it's good to feel my toes again.



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Transition Discipline

Mapping out priorities when starting a new job can ease stress and help you hit the ground running



The very nature of starting a new job jeopardizes the chances of a successful, or at least smooth, transition. In a time when you need to be at your best, you feel the greatest anxiety—anxiety that impairs your judgment and social skills.

Your anxiety is well-founded because you understand the risks. Studies indicate that failure rates for new executives approach 40 percent to 50 percent. Unfortunately, there is too much to know and too many unspoken expectations to make the transition process anything but stressful.

Research supports what we know intuitively: Failures or setbacks during a transition occur because newly appointed leaders falter at getting along while they are trying to get it done. While the advice to use the first weeks on the job to question, listen and learn is sound, it's hard to act upon. Executives often feel that they don't have a grace period because they sense their new colleagues responding with thinly veiled impatience.

Consider a client of mine named Philip. Philip was insistent that he wanted help in moving into a new role, but he never seemed to make progress on his coaching assignments. While his behavior was illogical, it was understandable. He was cast at sea in his new job, buffeted by waves of deadlines, reorganizations, interpersonal issues and staffing challenges. I had to threaten to terminate our relationship, the coaching equivalent of shock therapy, to get him to think rationally about his priorities.

The competing demands inherent in job transitions bring on heightened anxiety. Daniel Goleman, in his book *Social Intelligence*, defines a neural state called "frazzle." In this stressed state people become self-absorbed and find it difficult to con-

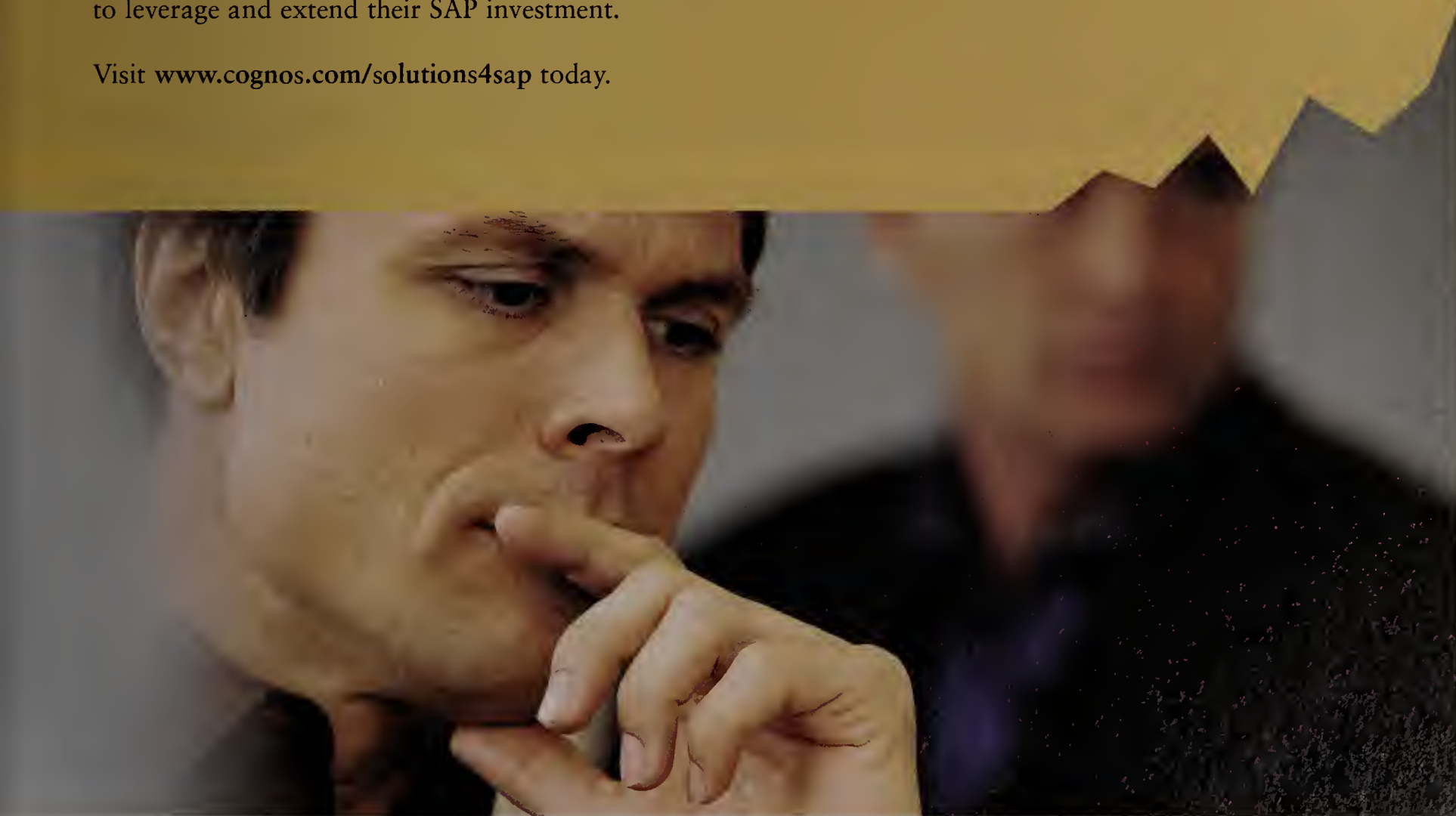
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centrate, think clearly and establish a rapport with others. The challenge of job transitions is to manage stress so that you can operate at your best both cognitively and interpersonally. And the key to managing stress is to take control by formulating a transition plan or “road map” and building it into your calendar.

Start by determining what you need to learn and from whom during the first week on the job. Then, identify your stakeholders and schedule meetings with them within your first few weeks. These meetings serve three purposes: to establish a rapport with stakeholders, to understand what they care about and what you can do to build credibility, and to signal a sense of your values and working style.

Establishing a rapport requires one-on-one, in-person meetings in venues where both parties will be relaxed. Coffee and lunches are great, but time spent together on airplanes is even better. As a bonus, sales and operational types will appreciate your interest in traveling to the field so that you can experience the front lines of the business firsthand.

Understanding what stakeholders care about is the next step. However, many clients are intimidated by what to ask and how to behave in these meetings. I tell clients that by the end of the meeting they should understand the stakeholder’s key objectives and initiatives, major concerns, how to support their interests and who they should get to know.

Let the stakeholder do most of the talking, but be ready to share your views. Be friendly and respectful, look them in the eye, and clearly state the meeting’s purpose. At the meeting’s end, thank them and say you will “circle back” to confirm your understanding and review a draft of your strategic road map with them once you have gathered more information. Afterward, demonstrate your commitment by doing something unexpected and relevant on their behalf, such as following up on an issue. Such an act signals values and working style.

Once you have worked through half of these meetings (about a month into the job), you are ready to formulate your strategic road map. This should include an assessment of the situation, objectives, strategies and initiatives. It should consist of six-, 12-, and 24-month phases with success measurements, key issues and mitigations, and next steps.

It’s likely you won’t feel comfortable doing this with key stakeholders so early in your tenure. An alternative is to draft the road map with your direct reports and then review the results with external stakeholders. Again, use your calendar to take control by scheduling these circle-back meetings before you draft your road map.

Through this simple process, Philip regained control over his job while securing the support and commitment of those around him. In fact, this process should be part of every leader’s planning repertoire. Regaining focus is key to fighting off the frazzled mind and ensuring that getting it done isn’t at the cost of getting along.

Reader Q&A

Q: The most stressful aspect of a transition is dealing with the expectations of direct reports. What tips do you have for building credibility with them?

A: People want to be respected and valued. They want to work for someone who cares about them, is competent and has vision. Jump-start strong relationships by taking the time to get to know your staff—their goals, backgrounds, job challenges, passions and ideas. Demonstrate your understanding by removing barriers to make their jobs easier. Respecting the past is also key to building credibility. Many executives commit the faux pas of criticizing the past. Doing so dishonors those whom they need to engage in the future.

Q: You say research shows a 40 percent to 50 percent failure rate for newly appointed leaders. Why is that?

A: Success in leadership roles depends on relationships and knowledge of the organization and industry. Most organizations don’t have support systems to facilitate the transition process. For new employees, the lack of relationships and credibility combined with an unfamiliarity with the corporate culture, sources of power and informal networks make the transition period treacherous, even for executives with strong track records.

Q: Can you offer me suggestions for how to move from technical lead to CIO? I have worked in IT for 15 years. I have a master’s degree in technology management and computer science.

A: IT professionals with your qualifications are in demand. But skilled professionals can be sidelined because of issues with building relationships, delivering on commitments and building teams. Career counseling will help you understand your motivators, values and goals, and will enable you to plan an approach to accelerate your progress. **CIO**

All the Right Moves

Experienced CIOs share the best moves to make in **YOUR FIRST 90 DAYS AS CIO** in this Feb. 8 teleconference. To register, contact Rick Pastore at rpastore@cio.com.

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Susan Cramm is founder and president of Valuedance, an executive coaching firm in San Clemente, Calif. To ask a leadership question or to see more reader questions and answers, go to www.cio.com/leadership. E-mail feedback to susan@valuedance.com.



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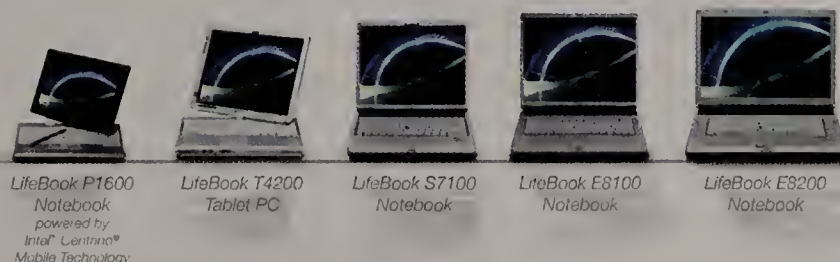
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SECRETS OF OFFSHORING SUCCESS

BY STEPHANIE OVERBY

Even as offshore outsourcing has matured, best practices have been few. Now, two top academics reveal the principles that should guide CIOs.

Mary C. Lacity probably knows as much about IT outsourcing as anyone in the industry. Currently professor of information systems at the University of Missouri-St. Louis, Lacity has studied the industry since its genesis nearly 20 years ago. And you'd be hard-pressed to find someone who's talked to more CIOs about their outsourcing coups and catastrophes. Yet just a few years

ago when CIOs would call Lacity and ask her if she could send them any good offshoring research, even she had to say, "No."

Sure, there's anecdotal evidence of what's worked for some and what hasn't for others when sourcing IT work overseas. But definitive best practices have been hard to come by.

So three years ago, Lacity and Joseph W. Rottman, assistant professor of information systems at the University of Missouri-St. Louis, set out to rectify that by conducting interviews with offshore outsourcing practitioners and their suppliers. Using that research, they've developed what they believe to be one of the first rigorous, peer reviewed examinations of offshoring best practices.

To date, they've interviewed more than 165 individuals from 40 companies—and not just the usual suspects. Certainly, they've talked to IT executives and project managers at client organizations. But Rottman also spent three weeks in Bangalore, Mumbai and Hyderabad interviewing members of offshore development teams from managing directors down to programmers. Cumulatively, these one-on-one talks have provided a gold mine of data. The duo has produced no fewer than eight published articles and reports from their research, gobbled up by information hungry offshoring customers and suppliers. And they plan a

Reader ROI

- :: Emerging best practices for offshore outsourcing
- :: Tips for spanning the CMM divide
- :: How to build "social capital" with suppliers



Professor **Mary Lacity**
and assistant professor
Joseph Rottman
of the University of
Missouri-St. Louis set out
to identify best practices in
offshore outsourcing.

book to be published by early 2008.

Lacity and Rottman's early examinations focused on the offshore outsourcing learning curve and best practices for accelerating it while maintaining quality and cost savings. Now they're focused on the delicate process of transferring knowledge offshore while still protecting intellectual property.

The basic thrust of their findings—that offshore outsourcing takes a lot more work than its domestic counterpart—comes as no surprise. But their research crystallizes just where that micromanagement proves most effective and sheds light on some novel tricks of the trade. Although most advice about how to do offshore outsourcing right focuses on processes, requirements, and the like, Lacity puts forth an interesting thesis. Successful offshore outsourcing ultimately is not about processes or requirements. Rather, it is the result of a continuous buildup of "social capital" between customer and supplier. Recently, Lacity and Rottman sat down with Senior Editor Stephanie Overby to discuss some of the best—and worst—ways to do just that.

CIO: So, the bottom line appears to be that a relationship with an offshore outsourcer requires a lot of hands-on involvement.

MARY LACITY: More, more, more.

JOSEPH ROTTMAN: Better, better, better.

Yet the level of management required still catches offshore customers by surprise.

LACITY: Even though we have some research out there and consultants, so many companies make the same stumbles in their initial efforts to go offshore.

ROTTMAN: I got a call this week from a consultant for a very large company. They've got an operation with about 100 headcount in Hyderabad, and they're getting ready to shut it all down. They're really stumbling because they underestimated the knowledge transfer issues, the cultural differences, even the time zone issues. And this is a very large company that you would think would have done the due diligence and put some governance into the engage-

ment before ramping up. Now it's spinning out of control.

LACITY: It's like every new sourcing market that I have seen. The initial push is for cost savings. Senior management tends to look at IT as a commodity. People go into it with that cost focus. But by the time you get to studying the companies that are pleased with their global sourcing model, their first sound bites are always about quality, agility and flexibility.

How long does it take to move up the learning curve with offshore outsourcing?

LACITY: It depends. Sometimes it's six months. Sometimes it's two years. Sometimes you just abandon offshore and never go back again.

You say the management costs associated with a successful offshore outsourcing arrangement can run upwards of 50 percent of the total contract value, versus 5 percent to 10 percent for a typical domestic outsourcing relationship.

LACITY: When I was looking at domestic outsourcing 17 years ago, the transaction costs were tremendously high too. And that's what we see now for offshoring—up to 69 percent

of the value of the contract. But those costs will drop over time. They're bigger during the learning curve, when you have to do all the training, developing these deep relationships with suppliers. Eventually you start to institutionalize it and you start reaping the rewards of that initial investment.

You say one investment worth making is bringing an engagement manager over from the vendor.

ROTTMAN: For many engagements it's a necessity. [The engagement manager] is the primary point of contact for the client's project managers. That person will work with both the onshore and offshore development teams. They can help mitigate some of the time zone risks, the knowledge transfer risks, the cultural risks. That person is a key piece to all of this.

But an engagement manager is an expensive employee to have onsite. It's usually a person with four to six years of experience managing projects and a lot of customer-facing duties. When managers are looking only at labor arbitrage and the delta between onshore and offshore rates, they don't want to throw in that onsite engagement manager.

BRIDGING THE CMM GAP

THE TENDENCY OF INDIAN vendors when delivering projects is to follow to the letter the Software Engineering Institute's Capability Maturity Model practices. Their American customers may be used to a more casual, less bureaucratic approach to software development. To make an offshoring relationship work, the two sides have to meet somewhere in the middle. Mary Lacity and Joseph Rottman offer these tips for spanning the CMM divide.

- ▶ **Get CMM certified.** You don't have to elevate your IT staff to a Level 5 shop, but growing your organization's CMM understanding allows you to create better specs and the vendor to deliver a better result.
- ▶ **Import expertise.** If your staff isn't fluent in CMM and your vendor's staff knows little about your business, problems will ensue. Bring a CMM expert over from India—someone who also doesn't understand your business—to identify ambiguities in requirements before they're sent overseas.
- ▶ **Ask for flexibility.** CMM processes provide great value to your Indian vendor, but some may seem like a waste of time—and money—for you. Negotiate with your vendor about which processes of theirs you're willing to pay for and which you are not. A flexible CMM that limits unnecessary documentation and overhead may be desirable.

—S.O.

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What about knowledge transfer?

ROTTMAN: Knowledge transfer is a fairly significant stumbling block. To move out of the initial phases of offshoring to focus on value-add and quality, you need to manage the knowledge transfer effort with greater rigor than if you're just focusing on cost.

LACITY: When you're in the early stages of a learning curve, you tend to do more pilot projects. You pick things for which you already know your requirements. As

understand the company's business.

So they took that learning and developed extensive training and job shadowing and integration practices to make sure that the development teams were integrated as tightly into the U.S. teams as their internal employees.

How did they transfer knowledge while protecting their intellectual property?

ROTTMAN: They broke up the projects

expert from the vendor who doesn't know the specifics of your business. Then that person can flesh out the ambiguities and ask all those questions here when they're sitting next to the client, rather than throwing it offshore and waiting for a whole team to ask the same set of questions. [See "Bridging the CMM Gap," Page 30.]

Is it still important for the client to improve its own CMM capabilities if it wants to source work offshore?

ROTTMAN: CMM capability is necessary but not sufficient for knowledge transfer. You have to have that framework in which to work. But that by itself is no substitute for experience. It does help in requirements definition and process mapping. But it's no substitute for knowing the people offshore and how they work. It's no substitute for real experience or social capital.

What do you mean by social capital?

LACITY: Work gets done by people. It doesn't get done by processes. It doesn't get done by documentation. If you want to put an umbrella over all the things that we've talked about—an onsite engagement manager, job shadowing, bringing a CMM expert from overseas—it's really about building the social capital between the customer and the supplier.

It's not only about knowing the business. It's knowing who in the business does things. How do they do it? And once that social capital is developed, then knowledge transfer occurs. You develop better relationships with your supplier. Your quality goes up. And you have more satisfied supplier employees who want to stay on the account, so turnover goes down.

It's so simple. Of course everybody needs to meet face-to-face. Of course everybody needs to develop a personal relationship. But it's expensive. So customers don't start doing it until they let up on costs and say, "I've got to make an investment in this social capital that's going to let me finally achieve what I'm expecting to get from offshoring." **CIO**

Senior Editor Stephanie Overby can be reached at soverby@cio.com. To comment on this article, go to the online version at www.cio.com/020107.

Work gets done by people. It doesn't get done by processes."

—Mary Lacity

you try to use suppliers more strategically and do more value-added kinds of work, the issue of customer-specific knowledge—what is idiosyncratic about their business processes—becomes more critical. We're looking at practices for how the client can explain and transfer knowledge about their idiosyncratic needs to a supplier. How do you do that cost effectively and not give away your intellectual property? It's a very delicate balance.

Sounds like quite a trick.

ROTTMAN: Let me give you an example. There was a Fortune 100 industrial manufacturing firm that had significant knowledge transfer issues. They were offshoring the development of embedded GPS software—software that controls the operation of a piece of industrial equipment. It has greater memory constraints, speed concerns, et cetera, than software written in C++ or Java, or anything like that. Their first attempt at offshoring, they followed a throw-it-over-the-ocean model because they really thought they had their requirements down and could do it with very little onshore presence. That resulted in zero deliverables. They realized later that the supplier didn't even know what the machinery looked like for which they were writing the code. They didn't comprehend the concept of embedded software. And they didn't

into three- or five-day tasks that could be wrapped up and sent to an offshore development team. Then they separated those tasks among various vendors with the idea that one vendor wouldn't have enough pieces of the IP puzzle to put it all back together. Even with the increased transaction costs, they were able to obtain between 10 percent and 15 percent cost savings on the offshored projects.

Indian software development companies value the software quality processes laid out by the Software Engineering Institute's Capability Maturity Model (CMM). Can that create problems?

LACITY: Yes. We found a lot of that. CMM is what this offshore supplier delivery team is trained in. They are expecting requirements to come over in that form. That's the start of their work processes. We talked to one Indian CEO who found an interesting solution. You bring to the U.S. a CMM

More on Offshore Outsourcing

For more on **BEST PRACTICES AROUND OFFSHORE OUTSOURCING**, read an expanded version of this interview with Mary Lacity and Joseph Rottman. Find it at www.cio.com/020107. For more on this subject, see the **ABCs OF OUTSOURCING** at www.cio.com/abcs.

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Ensuring availability at your distributed sites is critical. Take advantage of out-of-band management tools to support remote system availability.

Business Continuity and the Branch Office

From the bank on Main Street to the department store in the local mall to the hotel on a secluded beach, American business meets its customers at its branch locations. Consequently, those venues should be models of business efficiency, servicing customers on-demand and in the manner they choose.

To ensure that the customer experience is not jeopardized by failures of point-of-sale, ATM or other key systems, some businesses are building redundant infrastructures at their distributed sites. The imperative to ensure customer satisfaction by increasing network stability may seem to warrant this approach. But companies should consider whether they can justify these expenditures, especially across what may be hundreds, if not thousands, of sites.

Most organizations, unfortunately, lack a central strategy and clear accountability for managing branch office infrastructures. That makes it hard to get a handle on how much time and money is spent on equipping and maintaining duplicate systems at off-site locations to ensure business continuity. Furthermore, the lack of such a strategy leaves organizations open to other costs and risks related to business continuity. Consider, for example, the on-site IT service calls that still will be required to fix and reboot the primary server. Without a strategy, organizations also are not likely to

have in place the tools required to determine whether a service provider's infrastructure issues may have contributed to downtime or service disruptions at the branch. Add to that the time lost when IT staff members have to wade through the hodgepodge of management consoles that populate branch office infrastructures to try to analyze and address the incident.



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There's got to be a better way. As organizations build new branch facilities, they need to put in place plans to support a simpler, cheaper and more effective method of ensuring availability at these sites, as well as managing their remote assets.

"The easiest answer is centralization to improve the availability of remote sites," says John Katsaros, a principal at Internet Research Group. Rather than building in redundancy, organizations in most industries should be removing as many servers as possible from the branch and pulling IT activity into central operations. "Putting in an out-of-band [management] solution is part of the simplification of the branch," he says.

Out-of-band management products provide centralized control and repair of local and remote IT infrastructure, even when connectivity is lost or devices are down. Avocent is the leading vendor in this space, providing businesses with a single interface to quickly

changes to operating systems, applications, hardware or other components are often behind system downtime. According to industry analysts, 20 percent of planned changes, even when properly managed, cause outages, due to the lack of visibility around system dependencies. Mother Nature chips in, too—businesses equip their remote servers with uninterruptible power supplies, yet power interruptions still sometimes cause equipment to crash, creating the need for manual reboots.

Wherever the fault lies, the fact is that "companies today are defined by their IT infrastructure," says Katsaros. "When things don't work, they're losing business." The toll that degradation and downtime at branch offices takes on both revenue and productivity can't be ignored (see chart, "Branch Office Downtime & Degradation Costs Are Significant"). Indeed, in some highly regulated industries, the imposition of fines may further exacerbate the situa-

tion—the insurance industry, for instance, is subject to penalties should system outages delay issuing checks to policy holders.

Service providers add another risk to the mix. Depending on the number of locations a business maintains, it may be dealing with as many as two dozen service providers for broadband connections, multiplying IT leaders' concerns as well as their management requirements. While service providers commit to service level agreements, it's not easy for organizations to assure that these SLAs are being met—unless, that is, businesses are using out-of-band management products

that offer serial-side logging and detailed reporting capabilities. Avocent's DSView management console pulls in data that may be used to determine whether service providers are meeting SLA requirements, offering in a single management console time-stamped event logs of activities across multiple sites and appliances.

The DSView management software helps organizations efficiently manage business continuity issues whether they are the result of service provider vulnerabilities or other causes. The last thing most IT personnel managers want to do when they're trying to restore service or analyze problems is weed through a pile of management and configuration systems specific to the various platforms in place at branch locations, in search of root causes and fixes. They can avoid that problem—not to mention the hassle of training IT employees on a bevy of systems—with DSView's centralized console, which works across multiple platforms at any number of locations.

Bad things happen to good systems, and they always will. With Avocent's out-of-band management solutions, IT leaders have powerful tools to limit the impact of downtime and service disturbances at the remote sites where they come closest to their customers. They also can limit the costs the organization incurs and the inconveniences to their staff of having to address these problems with on-site visits.

One IT leader who was recently questioned about the challenges of maintaining remote systems perhaps best sums up the advantages of out-of-band management. "The faster you can fix it," he said, "the happier everyone is." ■

Branch Office Downtime & Degradation Costs Are Significant

Industry	Average # Branches	Downtime Hours/Year	Degradation Hours/Year	Average Revenue	Average Lost Productivity
Finance	212	719	461	\$56 M	\$165 M
Health	62	180	213	\$17 M	\$25 M
Trans.	101	172	126	\$14 M	\$18 M
Mfg.	159	393	373	\$80 M	\$74 M
Retail	174	322	196	\$18 M	\$23 M

and efficiently manage their remote infrastructures. Its products include the DSR line of KVM over IP switches, Cyclades serial console servers, and DSView 3 management software.

With out-of-band management solutions, organizations gain the critical ability to reboot remote systems that may go down for any number of reasons. Often, unexpected downtime is the result of applying a software patch. Given the continuing parade of bugs and vulnerabilities in commercial applications, and the accelerated speed at which exploits targeting known vulnerabilities appear, patching requirements aren't going away anytime soon. Yet the patching process is bedeviled by the fact that vendors often don't provide much information on what's being patched or what else might be affected when a patch is applied.

"EMA consulting and research shows that patches and configuration changes are the cause of IT service disruptions from 60 to 90 percent of the time," says Dennis Drogseth, vice president at Enterprise Management Associates, "and that there is an 80 percent probability of something going wrong, at minimum, 20 percent of the time when patches are applied."

Plenty of other events necessitate system reboots, which adds to the inconvenience and costs of trying to support distributed locations without out-of-band management tools. Software upgrades or

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IT Builds a Better



As companies seek more and better ideas, CIOs have an opportunity to reinvent the innovation process and, by enabling people to collaborate, make IT an engine for growth

BY CHRISTOPHER KOCH



Innovation in big companies has always been treated like gold—hidden deep inside secret vaultlike labs and protected from everyone except the researchers in lab coats. When products or services emerge from the labs after years of development—and just one in a hundred does—they fail most of the time.

Faced with this lack of productivity, along with increased competition and shrinking product lifecycles, CEOs are no longer willing to rely exclusively on their internal labs. Asked in a recent IBM survey to rank their most important sources of innovation, CEOs placed internal R&D labs eighth out of nine, far behind the general employee population, business partners and customers. But only half felt that their organizations were collaborating beyond a moderate level. Worse, in another survey by The Boston Consulting Group, nearly

half of executives said they are dissatisfied with their companies' investments in innovation.

Out of all this dissatisfaction emerges a tremendous opportunity for CIOs: to use IT as the glue for a new, more distributed innovation process. The CEO wants to invite customers, suppliers, independent innovation mercenaries, even competitors into the innovation process. But if these groups can't effectively communicate, collaborate and share informa-

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tion, this new process will be less productive than the old one. Integration—of data, of people, of internal and external organizations—is critical, according to nearly 80 percent of the CEOs surveyed by IBM. Yet fewer than half say their organizations have adequate technology integration to support innovation.

There's a job here for the CIO beyond providing the glue gun of integration support. With a process that is becoming IT-intensive, why shouldn't IT design and own the process itself? So far, however, there is little evidence that CIOs are driving the innovation train. "CIOs are the caboose," says Jeff

tion, process standardization and integration will test CIOs' ability to lead process change in an area of R&D where they have had little, if any, involvement: the "R" part of early idea exploration and more free-form experimentation. First, they need to figure out how IT can enable many groups to communicate and collaborate without creating a management nightmare. In doing this, CIOs need to create and support standard processes for innovation so that this newly expanded and connected network doesn't crush productivity. In a recent survey by research company Aberdeen Group, more than 80 percent of

product in a lab, reverse engineer it and have a competing product on the shelves in six to nine months," says Dan Staresinic, global marketing director for consumer products with software vendor UGS and a former product supply manager at Procter & Gamble (read how Procter & Gamble revamped its innovation process, Page 40). Opening up the innovation process to outside collaborators hedges the risk of shorter product lifecycles by putting more ideas for products into the pipeline. "You want to lower your competitive exposure by having many little investments rather than a few big ones," says DeGraff. "By doing that,

Incremental efficiencies aren't enough in the age of outsourcing and offshoring. **CIOs need to shift their emphasis** to breakthrough **innovation in processes** that **increase revenue.**

DeGraff, associate professor of management education at the University of Michigan's Ross School of Business. "The COO and chief R&D officer have a vision, they appeal to the CEO and they all craft the innovation strategy in an offsite. Then they appeal to the CIO and say, 'How do we support this?'"

Yet with their reliance on IT to enable a broader, more global innovation process, companies may not be able to develop and maintain a long-term competitive advantage in innovation unless the CIO plays a bigger part in developing the strategy as well as executing it. "Innovation more often expresses itself on the revenue side of the income statement, and CIOs have a historical bias toward the cost side," says Robert Austin, associate professor of business administration at Harvard Business School. "That has to change."

The increased emphasis on collabora-

business executives identified process definition and standardization as an important strategy for improving their product development performance.

In companies where innovation is a critical part of success, the need for greater IT involvement will give the CIO more knowledge of the innovation process than any other C-level executive. Whether that translates into a strategic voice in the market direction of the company will depend on CIOs' leadership skills, their personal relationships with their CEOs and these CEOs' own views of the strategic value of technology.

How the Innovation Process Is Changing

It's clear why companies are opening up their innovation processes to just about everyone: financial risk. "Today, it's not uncommon for a competitor to put your

you also maximize your opportunities for new breakthroughs because you're speculating in many different areas."

But by expanding the pipeline, companies expose themselves to a different kind of risk: management complexity. For example, inviting customers into the product innovation process means a potential avalanche of data that needs proper distribution and analysis. According to research company Forrester, 95 percent of grocery shoppers said they'd be willing to test new products and provide feedback to consumer packaged goods companies. When hundreds of millions of consumers push the "contact us" button on your website, you need mechanisms for sifting through the data and routing it to people who can interpret it and respond. And response time is critical: Almost all respondents said they would be more likely to buy from companies that reply to their queries quickly.

The stakes are even higher for IT when you invite contractors into the process. They don't just need to connect and pass data, they need to collaborate with internal employees and each other to avoid duplicating work and to contribute to projects that they are jointly assigned to. "The level of complexity is increasing immensely because you now have to vet all these different ideas and share information with people around the world," says Robert Cooper, professor of marketing at the DeGroote School of Business at McMaster University.

If not managed well, all these ideas can bog down the R&D process. DeGraff observes that companies can easily become paralyzed by all this creativity and remain mired in early-stage experimentation that leads nowhere.

Addressing this issue requires CIOs to take enterprise integration to a new level. In a study of 1,000 companies, the consultancy Booz Allen Hamilton found that only 94 were consistently more profitable than their competitors while spending less on R&D as a percentage of sales than the industry average. Those 94 have one thing in common, according to Kevin Dehoff, a vice president at the consultancy: high levels of cross-functional integration and collaboration—especially among groups that deal with customers such as sales, marketing and customer service. "R&D could come up with the greatest mousetrap, but if they don't understand customer requirements then the best mousetrap won't translate into better business performance," says Dehoff.

A hint of the advantage for highly integrated companies is evident in the returns from standardizing and auto-

matizing the "D" part of R&D—product development—on which vendors and CIOs have been working for years. Aberdeen has found that automating product development reduced product costs by 17.5 percent, cut design cycle time by 25 percent to 30 percent and reduced product defects 12-fold.

Of course, product development is focused on speeding a known quantity—a product design—to market. Experimentation is harder to standardize and automate. And IT tools that support research are less well-developed, observes Mike Burkett, a vice president at AMR Research. Yet with better records of past experiments, researchers can avoid dead ends that have already been explored, as well as find information they can leverage and reuse. IT can also reduce experimentation costs by replacing tests such as chemical explosions or car crashes with virtual versions. "IT can drive down the cost of trying things, which speeds up the process and lets you iterate more than before," says Harvard Business School's Austin.

A New Role for CIOs

A bigger issue for CIOs than the deployment of technology that supports innovation is the role they will play in improving and managing the innovation process. Innovation has been the province of R&D, with IT in "an optimization role," says DeGraff. "[CIOs] have been trained to eliminate waste, and that's become their natural focus."

But incremental efficiencies aren't enough in the age of outsourcing and offshoring. When CEOs can pack up a process and its IT and ship them to lower-cost destinations, they are less likely to view process improvement as a route to success. The gulf in thinking between CIOs and CEOs shows up in a recent survey by consultancy McKinsey, in which 43 percent of technology executives said that automating pro-

Elements of an IT-Enabled Innovation Process

The capabilities you need when ideas for new products come from outside the lab—and outside your company

Collaboration. Communication is critical among both internal employees and external contractors. Agree on a medium, whether it's e-mail, IM or fancy collaboration software, and get everyone using it.

Data access. Easy access to research information is the basis for doing collaborative innovation work with outsiders. Make project data available in a format that is standard, simple and easily viewable—think PDF and HTML.

Process standardization and automation. Standard templates and automated workflows that don't depend on specialized systems are important to getting multiple outside contributors involved in the process. Such tools also allow you to chunk up workflows so that one group can pick up where another left off. The caveat: Don't let standardization stomp on creativity—it's a delicate balance.

Cross-functional integration. Researchers and engineers don't own innovation anymore. Find ways to connect other functions to the innovation process—especially those that deal with customers, like sales, marketing and customer service—and give them a voice.

—C.K.

Be Visionary

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cesses is the best route to improving operational efficiency, while the leading response among business executives was improving economies of scale.

CIOs need to shift their emphasis toward breakthrough innovation, especially in processes that increase revenue, like those directly linked to customers. "If you can improve the customer experience, that's good," says Austin. "If you can contribute to that improvement in ways that customers are willing to pay for, then that gets you and the company farther." (Read about how MasterCard's IT department collaborates on product development, Page 46.)

The advantage CIOs have of being able to see across all the major processes of the business should enable them to become innovation leaders—if they can learn to think big. "CIOs have to come to the boardroom with a sense of destiny and sell their knowledge and their vision," says DeGraff. He recalls a recent strategy meeting with a client, during which the CIO demonstrated an expert knowledge of the business and had unique insights on the direction of the company. The problem, says DeGraff, was his focus on making operational improvements and cutting costs instead of how IT could be used to capture these growth opportunities for the business. "The data to identify new markets existed and the CIO was fluent in it. He just had never seen his job as helping people [interpret] trends about where the markets were going to be. He didn't have a story with a sense of destiny and a point of view about those new markets."

It's time for CIOs to get a sense of destiny. **CIO**

Executive Editor Christopher Koch can be reached at ckoch@cio.com. To comment on this article, go to the online version at www.cio.com/020107.

Capturing the Elements of Innovation

To increase global collaboration, Procter & Gamble tries a measure of IT in its R&D formula

BY CHRISTOPHER KOCH

Procter & Gamble is famous for being innovative, but the hard truth is that it had better be. The company spends 3.4 percent of its revenue on R&D, nearly twice the average of 1.6 percent in the consumer packaged goods industry. But big spending on R&D does not guarantee success: A study by consultancy Booz Allen Hamilton found no correlation between dollars spent on R&D and profitability. What matters is the productivity of that spend—the "hit rate" of ideas that lead to products.

The company behind Swiffer and Crest toothpaste assesses its hit rate at about 80 percent—pretty good, considering that the overall industry success rate is just 30 percent, according to ACNielsen. But in consumer products, the real blockbusters—products that aren't merely new variations or tweaks of existing products—are few. According to research company ProductScan, of 10,649 new product introductions across the industry in 2005, just 484 were truly innovative—meaning they added significant new benefits in areas such as formulation or technology. And the creativity of the big consumer goods players is waning: A study by McKinsey found the top seven companies, including P&G and competitor Unilever (whose products include Surf detergent), accounted for just 5 percent of all the patents filed for laundry and home-care products between 2000 and 2005.

No wonder then, that the 170-year-old manufacturer has been driving hard to improve its R&D productivity since CEO A.G. Lafley took the reins in 2000. Lafley's proclamation at the time, that by the end of the decade P&G would get at least half its new product ideas from external sources, was hailed as visionary. But really it was a response to the reality that the days of "not invented here" are over. Today,

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- :: Tools for promoting cross-functional integration
- :: How to automate the experimentation process

A close-up, black and white portrait of Keith Caserta, a middle-aged man with a mustache, wearing a light-colored button-down shirt. He is looking slightly off-camera with a gentle smile. The background is dark and out of focus.

IT can improve the success rate of R&D by integrating data used by researchers, patent lawyers and product developers, says **Keith Caserta**, P&G associate director and head of health care R&D information and decision solutions.

Lafley claims that outsiders are involved in developing 35 percent of new products, and P&G's spending on internal R&D has decreased 30 percent in seven years.

But P&G needed to do more than bring more cooks into the kitchen. It needed to change a perfectionist mentality in its research culture. "The front-end ideation process took time," says Steve David, who retired from a 34-year career at P&G in 2005, the last five years of which he spent as CIO. The company began rewarding researchers for speeding up experiments. "The goal was to encourage people to fail early and often and if the idea isn't working, either kill it or move it into another organization and let them work on it," recalls David, who is now a senior adviser to The Boston Consulting Group.

However, increasing the size and speed of the idea pipeline increased the complexity of managing the R&D process. Besides its own R&D organization of 8,000 scientists spread across 28 sites globally, P&G has outsourced portions of its R&D processes, such as routine chemical lab experiments, to lower-cost countries. The company has also begun collaborating more with outside technology companies, who pump new product ideas into P&G, collaborate with P&G scientists or simply develop products themselves with P&G's guidance and investment. In addition, the company uses its internal network and the Internet to connect with loose networks of research scientists who help solve vexing problems that are getting in the way of new products—a chemical formulation, for example. Coor-

dinating work and screening new ideas are critical to keeping the pipeline moving. "We need to run our global R&D organization as though we're in a single building," says Keith Caserta, associate director and head of health care R&D information and decision solutions with P&G.

This is where IT comes in. It takes an army to manage all these constituencies, making coordination and collaboration critical. "Opening up the idea process introduces more fragmentation and friction," says Navi Radjou, a vice president for research company Forrester. If IT is going to reduce the complexity of managing innovation in a company as widely distributed and diverse as P&G, it has to meet some difficult requirements.

First is flexibility. "We need IT that is

flexible enough to meet a broad range of business needs, because we do chemically based products, biologically based products and assembled products," says Caserta. Next is scalability. "Technology has to stand up to thousands of users in a global installation, and that's been challenging in some cases," he says. Finally, the solution should promote cross-functional integration and collaboration.

In an attempt to address all of these requirements, P&G is experimenting with product lifecycle management (PLM) software (which is traditionally applied to the product development phase of R&D for assembled products like diapers and razors) in the experimental research portion of all R&D processes, assembled products, and chemical, biological and mixture-based products. PLM is like ERP for the product development process: a big, feature-rich software platform that companies typically try to standardize across the entire enterprise. P&G has a pilot with vendor UGS using PLM as a backbone for storing and sharing its researchers' "lab notebooks"—the records of their experiments that are almost always created on paper. If the system becomes a reality, the lab notebook will become an electronic talisman that links internal P&G researchers across P&G's many global labs, as well as those of its contractors. The project is a reflection of the larger push within P&G to create a more connected, global innovation process.

Converting those notebooks to electronic form is no small matter for most researchers, who see any attempts to standardize or automate the research process as a threat to their creativity—even though they understand the benefits of sharing. "They are resistant to change of any type, and anything that they think affects their freedom they will fight," jokes Charlie Cruze, systems manager for P&G Pharmaceuticals and a former researcher.

The resistance to IT-based processes has persisted to the point of silliness. Some researchers at P&G are known to write up



"The goal was to encourage people to fail early and often," says **Steve David**, senior adviser to The Boston Consulting Group and former P&G CIO.

their experiments using Microsoft Office applications and then glue printouts of their work, page by page, into the notebooks, making them look like witches' wrinkly cookbooks. Less humorous is the way the notebooks stay hidden on researchers' shelves while their colleagues in other P&G labs unknowingly duplicate their work, or how the notebooks can be spirited away for months or even years by lawyers who need them as evidence for patent cases.

To accommodate researchers' discomfort with automation during the PLM pilot, Caserta and his team have been careful not to disrupt how researchers get their data into the system. The researchers can enter the information any way they want, whether in Microsoft Word or through legacy systems that are integrated with the electronic laboratory notebook (ELN) system. The plan is to allow researchers to throw in all sorts of documents—what technologists call unstructured data. They can then apply descriptive tags to the files. The system then converts the files to PDF format, allowing them to be searched and shared by anyone with access to the ELN system. The PLM software is already installed as the global standard for a number of areas in product development

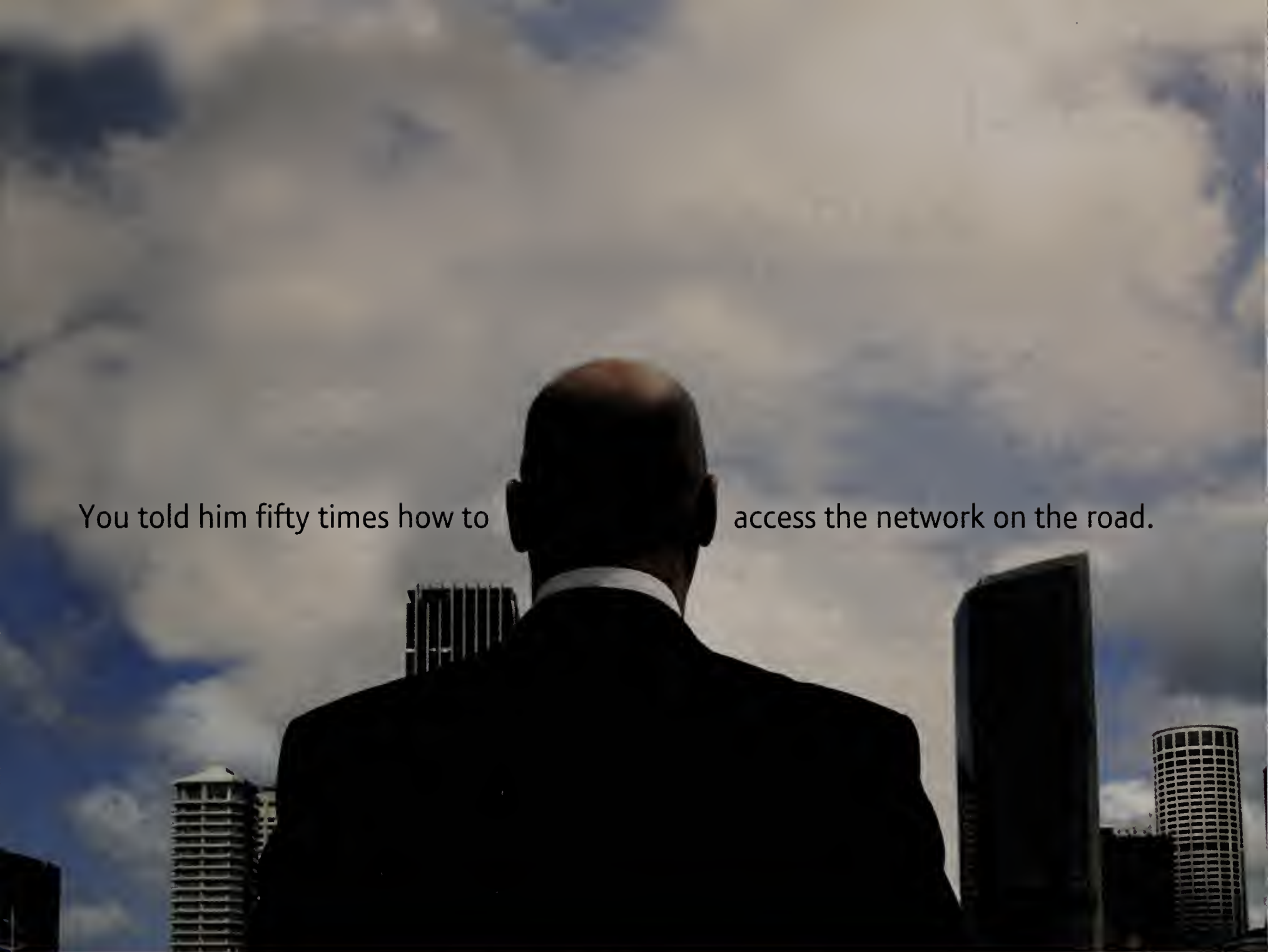
across all of P&G. By hooking into this existing system, the lab notebooks become visible to functions farther downstream from the researchers, such as engineers in product development, while functions with tangential involvement in the process, such as the patent lawyers, can access the data without removing it from the system. As a result, P&G increases cross-process integration, what Caserta calls "the horizontal view," of the innovation process within the company.

No less important are the subtle attempts to automate the research process itself. Templates that automatically display the researcher's name and the project don't assault researchers' delicate sense of independence but do demonstrate a direct benefit by sparing them from rote duties. That paves the way for acceptance of more standardization and automation of the process down the road. "We can template the stan-

Ideas for Collaboration

Futurists Don Tapscott and Anthony D. Williams write about how P&G harvests ideas from outsiders in **WIKINOMICS: HOW MASS COLLABORATION CHANGES EVERYTHING**. Read an excerpt online at www.cio.com/020107.

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dard, repetitive experiments so all they do is fill in the numbers," says Cruze. However, he adds, automation doesn't merely save individual researchers' time. It opens up projects to collaboration with researchers in other labs, who can see where one team left off and continue the work.

The pilot is small—only 75 scientists spread among a limited number of U.S. and international locations—and things change dramatically when you attempt to roll out complex enterprise software to

thousands (5,500 is the target globally). Meanwhile, trying to create a platform that can meet the needs of biotech researchers as well as engineers designing diapers may be a stretch. "To go from product idea all the way through to [product retirement] is a long time frame and maybe asking too much," says Robert Cooper, professor of marketing at the DeGroote School of Business at McMaster University. "I'm skeptical that they can hook it all together. It starts to become a 1,000-pound marshmallow."

The stakes are big. Improvements in speed and productivity in the early idea phase of R&D can have an impact all the way down the line. Concludes Caserta: "If you can improve your productivity in the idea phase, it gives you the opportunity to have a higher success rate at every stage after that." **CIO**

Executive Editor Christopher Koch can be reached at ckoch@cio.com. To comment on this article, go to the online version at www.cio.com/020107.

Technologies for Innovation

Multiple constituencies, from customers to top executives, have a role in the innovation process. There are technologies to help each group contribute more productively.

Idea Constituency	How IT Can Help	Vendors
Customers	• Surveys • Online validation of prototypes • Mining of customer complaints and suggestions	Active Decisions, Affinnova, Agile, E.piphany, IBM, Intelliseek, Questra, SAS, Spotfire
General employees	• Identifying internal subject-matter experts • Collecting and analyzing ideas	Akiva, BrainBank, IBM, Imaginatik, Knowledge Systems, Microsoft, Mindjet, OAS, Tacit
Academics and freelance inventors	• Screening independent inventors • Listing technologies • Matching buyers and sellers	Arizona Technology, Enterprises, InnoCentives, IP2IPO, NineSigma, UVentures, yet2.com
Project managers	• Reprioritizing innovation projects • Reallocating innovation resources dynamically • Fixing scientific bottlenecks • Collecting and sharing experiences from past projects • Supporting design-for-manufacturability and design-for-serviceability	AspenTech, Formation Systems, Gensym, IBM, IDe, Invention Machine, Microsoft, NinaTek, SAP, Sopheon, Spotfire, UGS PLM
Top executives	• Analyzing patents • Predicting technology lifecycles and financial impact of market disruptions • Identifying risky projects	Capgemini, Evalueserve, Icosystem, Invention Machine, NuTech Solutions, SAP

SOURCE: Forrester Research and CIO reporting



A PROACTIVE APPROACH

TO PROCESS OUTSOURCING EFFICIENCY AND BUSINESS AGILITY

The good news is: smart CIOs are successfully outsourcing business processes at a brisk pace.

Indeed, a staggering 82 percent of *CIO Magazine* subscribers surveyed by IDG Research Services say their companies are currently outsourcing at least one business process, or will be within the next two years. This growing momentum behind business process outsourcing (BPO) reflects its bright promise of its cost savings and efficiencies.

The bad news is: if these same IT leaders fail to implement business process management (BPM) to optimize core processes before farming them out, then they put the whole initiative at risk.

"The execution of process outsourcing arrangements doesn't always live up to expectations," says Patrick Morrissey, SVP, marketing and business development, at Santa Clara, Calif. based Savvion, which sponsored this new research. "Outsourcing of process requires the same focus and discipline as internal process improvement strategy. Outsourcing is an extension of business strategy."

Inside the Numbers

Some 81 percent of survey respondents indicate that cost savings most often drive their decision to outsource. However, respondents most frequently point to "poor service and quality" as the reason their outsourcing engagements fail. Thus, it's not at all surprising to learn that respondents are only moderately satisfied with their sourcing providers.

**Marrying BPM and BPO
enables CIOs to deliver on
the true value of outsourcing.**

Where does the discrepancy between the promises and reality come to bear? Often, unmet expectations arise when CIOs farm out services that they have yet to fully master in-house.

This oversight proves to be a costly mistake because the CIOs then have no benchmarks by which to manage the process, or to accurately and fairly measure the success of their outsourcing engagements.

"CIOs can overcome this challenge by applying a business process management discipline to optimize a given process," says Morrissey. "But it's important to do this before handing that process over to a third party—especially if that process is a core business function. Process definitions, metrics and service

level agreements should be defined well in advance, and the process must be well understood."

About BPM

BPM is a systematic approach by which to create, manage and optimize business process, enabling measurable improvements in all areas of the business. It automates business processes in a repeatable and auditable way to achieve greater efficiency, higher quality and improved visibility into how the business operates. By implementing the right BPM strategies and technologies before engaging in an outsourcing relationship, CIOs can maximize these benefits and at the same time leverage the much-sought potential of outsourcing—namely, its cost savings.

Perhaps more important, a BPM discipline can give CIOs a clear vision into metrics and measurements by which to define outsourcing arrangements and gauge success. The ability to establish and articulate such metrics drastically reduces the chance of misalignment in regard to service and quality standards, thus addressing the real reason BPO initiatives tend to fail.

BPM also allows CIOs to maintain control over processes that are outsourced, so they can more comfortably delegate core business processes to "outsiders," without significant risk to the top line.

In short, marrying BPM and BPO enables CIOs to deliver on the true value of outsourcing.

"CIOs need to embrace BPM to drive as much efficiency internally as possible," says Morrissey. "Only then is it time to turn a process over to an outsourcing partner."

GO TO www.cio.com/whitepapers/savvion

If you're looking at outsourcing a core business process—or you've gone that route only to be disappointed—it's time to consider business process management. Download this research report now for insight into BPM and a "Checklist for BPO Excellence." You'll walk away with a better understanding of why marrying BPM and BPO is a better, more proactive way to approach outsourcing.

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All Charged Up

MasterCard gets a payoff through a flexible approach to IT-enabled product development BY MICHAEL FITZGERALD

The credit card business turned 55 last year, and it might look as though the industry is having a midlife crisis—what with credit purveyors trying to dump the classic mag-stripe-and-plastic cards in favor of cards that use wireless technologies and even mobile phones. But that's no midlife crisis. It's market expansion, and it could change the way most people use their credit cards.

"Startling innovations in technology are rolling like thunder through our industry," says W. Roy Dunbar, MasterCard's president of global technology and operations, in a May 2006 speech to the 18th annual Card Forum & Expo. Among the factors Dunbar cited as having sparked the need for innovation: consumer demands for easier, more secure transactions; globalization; and the impact of new technologies, which are creating new business opportunities (such as paying for something with a cell phone).

MasterCard faces more competition in part because it (along with Visa International) recently lost an antitrust suit, leaving the door open for its member banks to end now-exclusive relationships by signing deals with American Express and Discover. The company also sees an uptick in competition from PayPal and other online payment services.

Dunbar says MasterCard has plenty of good ideas; the question is knowing which ones to pick. Dunbar joined MasterCard two years ago after more than a decade at Eli Lilly. One of the main concepts he brought with him from the pharmaceutical industry was the idea of failing fast—that is, testing ideas quickly and discarding them if they don't work. In this way, one can accelerate the process of finding ideas that do work.

"You can't institutionalize innovation, but there may be supportive processes you can build," says Dunbar.

A Process for IT Innovation

Accordingly, MasterCard has moved to formalize support for innovation within its culture. It is two years into a program called Rapid Value Creation, an effort to approach new ideas systematically across the 210 countries where it operates. Rapid Value Creation starts with MasterCard's key functional executives, who meet monthly to set priorities for new ideas that come from groups like IT, product development and marketing. In this way, management is able to get in step behind ideas—and get them to market—more quickly than in the past.

Dunbar says MasterCard's IT systems are key to implementing new ideas. "The architecture is component-based and many elements are brought together in varying configurations to create just the right capability to support innovations," he said. At the beginning of the decade, MasterCard spent \$160 million overhauling its core systems, which Dunbar says should help the company develop new markets ahead of its competitors (the biggest of which is Visa).

Craig J. Maurer, an analyst at Soleil Securities Group in New York who has tracked MasterCard since it went public in May 2006, says that if MasterCard's IT is ahead of Visa's (something difficult to determine because Visa remains a private association), it may help MasterCard win deals with banks, particularly in emerging markets overseas, where Visa is less entrenched than it is in the United States.

MasterCard appears off to a good start with PayPass, its wireless, or "contactless," card system, which allows people to use a credit card without swiping it through a reader. Since its launch in 2002, PayPass has more than 11 million cards and devices in circulation, making MasterCard the largest purveyor of such cards. Meanwhile, MasterCard's success in expanding PayPass worldwide (in 13 countries so far, including Turkey) won the company several innovation awards in 2006, including being named Company of the Year by consultancy Frost & Sullivan. And the recognition is opening up new markets for MasterCard, including, potentially, the New York transit system, which has expanded a recent six-month trial of PayPass to enter the subway.

Reader ROI

- :: What drives innovation in the credit card industry
- :: Ways that IT enables new product development



"You can't institutionalize innovation, but you can build supportive processes," says **W. Roy Dunbar**, MasterCard's president of global technology and operations.

The subway trial required MasterCard to revise its technology approach more than once—for example, to adapt the range and sensitivity of its readers so that users didn't get stuck in turnstiles waiting for their payment to be approved. The experience has allowed MasterCard to look at how it could use PayPass to take tolls from cars, and other ways to get a slice of low-revenue transactions. Thinking in such directions is paramount for MasterCard, because credit cards, debit cards and stored payment cards now are used as often as cash. Maurer observes that MasterCard seems more aggressive than the competition about pursuing technologies like contactless payments, but he cautions that this is a nascent market. There are only about 36,000 establishments with PayPass readers, compared with 23 million places with conventional readers. He is more impressed by a deal between MasterCard and Cingular Wireless to test contactless payments using cell phones, in part because of Cingular's customer base of more than 50 million.

How IT Makes Money

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But again, the impact depends on whether consumers take to the idea. In January, the New York subway started testing PayPass using cell phones as a payment device.

IT in the Driver's Seat

One way MasterCard is trying to innovate faster is by expanding its sources of ideas. The company is going beyond its traditional partners, the financial institutions, and is listening as well to merchants and even consumers. Within the IT department, Dunbar has put in place what he calls an Accelerated Solutions Development Environment (ASDE), a software development process that helps IT respond more quickly to such proposals.

Dana Lorberg, group head of technology strategy and business development at MasterCard, says the environment enables the company to choose the software development methodology that meets a customer's needs best; some projects might be developed using a traditional waterfall methodology, others using an iterative method or agile methods. Project managers use ASDE to take a project from start to finish—from requirements development through the pilot stage to product launch.

The ASDE process was inspired by a project that addressed new card activation.

The company saw people getting new MasterCards and then leaving them, unactivated, in their wallets. One of MasterCard's issuing banks offered to work on the problem. MasterCard and the bank put together a program through which people who used their cards at participating stores got rebates. From the initial two-day meeting between MasterCard and the bank, it took six weeks to launch, including changes to MasterCard's systems in order to credit customer accounts with incentives to use the cards and with rebates when they did use it. The result was a significant increase in card usage over a three-month period.

Afterward, executives recognized the value of having a repeatable process for identifying and executing innovation. "What is misleading is the idea that innovation is dreamed up by product guys," says Jerry Sargent, MasterCard's vice president of debit strategy and alliance development: "IT, they see some things that we don't see. Our view of this innovation process is extremely collaborative."

ASDE was useful in developing a real-time debit card fraud monitoring tool that MasterCard expects to roll out this quarter.

One of MasterCard's technology vendors suggested the concept for the fraud monitor, proposing the two companies work together on a new way of scoring online transactions in real-time. The tool, employing neural network technology, uses information such as where a card was used last and develops probability ratings that a particular transaction might be fraudulent. MasterCard was able to develop a tool in about six months.

Dunbar says examples like these show that MasterCard has been able to boost its ability to innovate through collaboration. "We can facilitate large-scale problem solving and creativity," he says. Now MasterCard just has to keep up with the future. **cio**

Michael Fitzgerald is a freelance writer. He can be reached at michael@mffitzgerald.com. To comment on this article, go to the online version at www.cio.com/020107.

How to...

TAKE YOUR WAREHOUSE WIRELESS

Dorfman Pacific needed to grow, so it needed to get rid of the paper processes that held it back.

For all businesses, growth is a good thing. More sales, more customers, more demand, more revenue. But growth has a funny way of exposing inefficiencies by shining a harsh light on wasteful, entrenched business practices, loosely stitched together by siloed IT systems, that lead to high operational costs and act as roadblocks to real change.

At Dorfman Pacific, a mid-market manufacturer and distributor of headwear and handbags, the business had always been about serving the Mom-and-Pop stores that had constituted the company's customer base since its inception in 1921. But although the company had kept current with fashion, its warehouse processes had scarcely changed during 86 years in the business. Despite technology's march, its warehouse processes remained paper-based and relied on the workers' tacit knowledge of the warehouse and each customer's needs.

But in the late 1980s and on into the '90s, a new sales and distribution channel created room for growth: Dorfman Pacific began selling to the big-

box retailers such as Wal-Mart, which craved more of the 25,000 items that the company sold. Dorfman Pacific still sold to the small and midsize retailers, but the split between the two was now about half and half.

As the company sought to expand during this period, its modus operandi showed cracks: The paper-based order-picking processes that served Dorfman's 100,000-

square-foot warehouse were too inefficient; the warehouse itself was too small; the use of a temporary workforce and loads of overtime

to meet demand peaks meant it incurred huge operational costs; and siloed IT systems offered little computing assistance and inventory visibility. In short, the company's growth had spotlighted the inefficiencies inherent in the way things had always been done.

"In the environment we had, it was a challenge to actually do a good job," says Mark Dulle, the IT services director for Dorfman Pacific, who came on board in 2003. "It was stressful and very difficult to maintain any level of quality and get it right."

Reader ROI

- :: Why IT needs to research business processes before a rollout
- :: How to sell employees on a wireless project
- :: The importance of conducting a radio frequency study

BY THOMAS WAILGUM

Executives at Dorfman Pacific could see the future and knew they faced a challenge in expanding operations using the existing warehouse and technologies. So starting in 2001, top management, most notably CEO Douglass Highsmith, began to push for a big technology-driven change to business as usual. "I don't want to fight technology. I want to embrace it," Highsmith says. "We've got to constantly improve the technology applications of our company." A total revamp of Dorfman's operations, including a complete IT overhaul inside the warehouse, was called for. Paper was out. Wireless was in.

What follows is the story of how one company upended every square foot of its warehouse operations—its interior layout, day-to-day shipping and receiving practices, the equipment workers used and the IT systems enabling it all—and reduced its warehouse labor costs by 30 percent, saving more than \$250,000 a year and vanquishing many inefficiencies that had plagued its operations.

But the road to success wasn't without bumps. "There are things we didn't do right," Dulle admits. For one, he says, the project team pushed too far, too fast on the wireless implementation. As a result, the company didn't meet the initial March 2005 go-live date, which negated the first return on its investment.

What's most notable (and applicable for other CIOs), however, is what Dorfman Pacific did do right: The business side took full responsibility for the project's success; a cross-functional project team determined the overall plan, chose the appropriate technology and managed workers' expectations throughout; and a non-IT sponsor shepherded the entire project. IT was there at every turn but "this was not an IT project. No way," Dulle emphasizes. "This was strictly a business project." Which is why, he believes, it was such a success. Here's how the company did it.

Examine Existing Processes

Dorfman Pacific's steady growth in the '80s and '90s bolstered its status as one of the world's largest headwear and handbag companies. (You wouldn't know it but you've probably seen their hats, which are worn by celebrities and featured in *People* and *InStyle*.)

Then, in the late '90s, Highsmith pushed his company to grow even more. Dorfman Pacific took aim at the growing women's headwear market and what Highsmith calls the resort business—straw hats and other protective headgear worn in summer or at tropical vacation destinations. The company also pursued private-label and specialty work for Orvis and others. Dorfman Pacific had contracted out some manufacturing to cheaper countries in Asia; now it accelerated the process. It still serviced its smaller customers, but now it received orders from much bigger companies that wanted thousands of different items and box types.

To accommodate demand, the company expanded over the years to a 275,000-square-foot warehouse. But the bigger warehouse "wasn't set up for the growth we had had," says Dulle. And neither were its processes. Warehouse personnel received a paper order or "pick ticket" from a supervisor for, say, a Scala Western hat, drove a forklift to the bin where they thought it was located and manually picked the boxes off the rack. They brought the items to the packing area, put them in a box, stuck a label on the box and put it on a truck. However, merchandise bins were manually labeled and not easy to read. Workers knew the box types and had a sense of what they held but weren't always right since items were sometimes mixed together. The route that each worker chose to accomplish his pick work was up to him.

"Picking by order just wasn't going to cut it anymore," Dulle says, "but the worst part was that the warehouse was not really set up for anything other than picking processes."

As the company grew, so did its problems with the old system. Inefficiency reigned. Special orders could wreak havoc, and Dulle says the ERP system, installed by his predecessor, wasn't much help due to integration challenges with the rest of the systems. When the peak seasons hit in spring and fall, Dorfman Pacific had to hire temporary workers to get the goods out the door, which cost it around \$250,000 annually. "We used to have people working on Saturdays and Sundays, and tons of overtime," Dulle recalls. "That's where a lot of the costs came in."

Dorfman Pacific's warehouse problems are not uncommon in the manufacturing and packaged goods industry. According to Steve Mulaik, director of logistics consultancy The Progress Group, warehouses can get "out of control" because of a reliance on seasonal and temporary labor, high employee turnover or too many inexperienced pickers. In his research, he figures that a novice picker who simply follows a paper pick list can end up with a "pick tour" almost 20 percent longer than one who uses a system that employs wireless technologies, intelligent routing software and handheld devices—the kind of system that Dorfman Pacific thought it needed.

Put Everything on the Table

The impetus for Dorfman Pacific's warehouse makeover came from the top. Highsmith had seen wirelessly enabled warehouse management systems and knew he needed something similar to cut labor costs and enable his company's long-term success. "You could see how much more efficient you could be with the technology," he says. His vision, along with the guidance of the former vice president of operations and Dulle, provided the spark.

An outside consultant who reported in to Dulle and was embed-

ded with the management team acted as the project manager. The project team consisted of managers from the distribution center, purchasing, customer service and sales. IT was responsible for hardware selection, hardware and software installation, and providing an administrator for the new warehouse management system application.

Highsmith's vision soon boiled down to a simple question: What's the most efficient way to pick product with the fewest errors and the least amount of people? To find the answer, the project team analyzed how the 25,000 SKUs flowed through the warehouse and how the workers fulfilled each order. The team also measured the dimensions and weights of each SKU using a cube-a-scan, which records a box's dimensions. They examined the size of every bin and rack, and identified whether products were stored where they were supposed to be.

Everything was on the table. "We decided that if we're going to disrupt the warehouse, we're going to do it all at once and get it done," Dulle says. "We felt that that was the only way to go."

Dorfman Pacific execs also wanted to make certain that the wireless component, a critical piece of the overhaul, would work in their warehouse. They hired Texas Bar Code Systems to conduct a radio frequency study to see if the wireless signals would play nice inside the facility's concrete walls, steel doors and metal racks, and to identify the best wireless access points.

The IT infrastructure gluing this all together also needed a makeover. Dulle had to revamp the ERP system he inherited as well as select, install and integrate a new warehouse management system that had wireless capabilities and could sift through the company's warehouse data and shipping information. He also ripped out the old networking, cables and switches, and upgraded

FIVE STEPS to a Successful Wireless Rollout

Because you are changing the way people do their jobs, a wireless implementation adds an extra layer of complexity to project management. Here's how Mark Dulle, Dorfman Pacific's IT director, ensured that his wireless makeover would work.

Do Your Homework

Before Dorfman Pacific project team members made any changes to warehouse operations and before they contacted any vendors, they researched everything about how the warehouse operated—how goods were received, replenished, picked, packed and shipped. They also examined the business processes that supported the operations in the warehouse distribution center. The project team then used that data to determine what the ROI on a new wireless warehouse would have to be to justify the expense. The team also hired a company to conduct a radio frequency study to see how the wireless signals would play in the facility and to determine in which areas of its 275,000-square-foot warehouse and in which job functions wireless technologies would work best and have the most ROI.

Sell the Project

Since Dorfman Pacific executives wanted to turn their warehouse operations "upside down," gaining the support of the warehouse personnel was critical. It's important to "sell the project to the warehouse employees and then have them take responsibility for designing processes and training as the project moves forward," Dulle says.

The project team set up a series of sessions designed to obtain employee buy-in by discussing how things worked in the warehouse, where the employees saw problems and opportunities in the environment, and whether they had ideas for improving operations without adding headcount. Then, Dulle says, a second set of sessions was held where executives described to workers how a wireless warehouse would address the issues and opportunities. "These were open discussions where the employees could voice their concerns with not only the technology but how the processes would change," Dulle says.

Make the Training Useful

The week before the go-live date in July 2005, Dulle says warehouse personnel inventoried the entire facility using the new wireless equipment (scanners and mobile devices) and warehouse management system. "This alone produced the biggest benefit," he says, because "it gave the employees a significant amount of time on the equipment prior to processing customer orders" in a live environment. Everyone "got some intensive, hands on training," Dulle says.

Determine How It Will Affect Your Customers

Dorfman Pacific has two dissimilar customer bases (Mom-and-Pop stores and big-box retailers), so it was crucial to understand how the wirelessly enabled distribution and logistics procedures would affect each base. Dulle says the company quickly learned that "the distribution process for a big-box chain store is different than that used for a Mom-and-Pop," and that they had to readjust the warehouse application to account for the difference. That also meant pushing the go-live date from March to July.

Just Go for It

Both Dulle and CEO Douglass Highsmith say that even with a delay in the launch of the new warehouse systems and processes, they probably could have used more time to make sure everything was perfect. "But there comes a certain point and time when you've just got to go," Dulle says. All the hard work they had done in advance—designing a robust, fast network, understanding the warehouse operations and preparing the workers for the new environment—gave him and others confidence that it would work.

—T.W.



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“We decided that if we were going to disrupt the warehouse, we were going to do it all at once and get it done. We felt that was the only way to go.” —MARK DULLE, I.T. SERVICES DIRECTOR, DORFMAN PACIFIC

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After hiring Symbol Technologies for the wireless networking equipment, HighJump Software for the warehouse management system and Zebra Technologies for the bar-coding equipment, and selecting an integrator (RedLine Solutions), Dorfman Pacific could see its future warehouse. The backbone would be a wireless local area network (with 802.11 connectivity) that utilized 15 wireless access points (APs) spread out over the facility that could simultaneously run the 802.11a/b/g bands on each AP. Warehouse staff would have 40 mobile and fixed-mounted computers on the forklifts at their disposal. The devices were kept simple: “[It was] all F1, F2, press this key, press this button—no mouse and no pen,” Dulle says.

In the back office, IT was set to roll out an upgraded ERP suite and the new warehouse management system that would direct the picking, packing and shipping processes using specialized logistics software. Data from the software would appear on the forklift’s mobile device and tell a picker where to go, what to grab and where to bring it in the most efficient way. Paper would be a thing of the past.

Learn from Mistakes

In late 2004, executives and the project team had to sell the change and set the expectations for the March 2005 go-live date for the folks on the floor. Executives held group meetings and one-on-ones, formed focus groups and selected project leads to get the message out. “We said, We’re going to make your lives different,” Dulle recalls. “We’re going to make it harder to make mistakes. We’re going to make it more efficient. We’re going to help you to do a better job.” Everyone got on board.

In the race to meet the March deadline, as the pressure to deliver the new system pushed everyone to work nights and weekends, and as the opportunity to deliver the first reduction in temporary labor costs loomed, Dorfman Pacific hit the brakes. Despite everyone’s efforts, the new system and processes just weren’t ready. “We pushed this very, very fast. We were trying to drive operational costs down, and we let that color our judgment,” says Dulle.

The go-live date moved to July. It was a costly decision. Dorfman employed the largest amount of temporary labor in March and April, and executives were counting on this first reduction in costs. However, the extra time allowed employees to work through lingering issues with the IT systems and the new shipping and inventory flows. For example, the warehouse management system required a different floor configuration and new ways to pick, pack and ship products. It also placed more emphasis on the process of expediting

the merchandise no matter how many other products were a part of the order and were, most likely, going to the same customer.

For bigger retailers, receiving 20 boxes instead of five wasn’t a problem. But for the smaller stores, receiving 20 boxes instead of the usual five made a huge difference because of the accumulated freight charges. The delay let Dulle and the team reconfigure the software to fix the problem and keep smaller customers happy.

CEO Highsmith says the decision to delay was based on how the premature rollout might have a negative effect on Dorfman Pacific’s customer base so close to peak season. “The technology embrace has to have a positive impact on customers. If it makes it more efficient here but has a negative impact on the customer, whatever gain you make you lose on the other end.”

After the delay, Dulle says, Dorfman Pacific was “mentally ready” for the new operations and procedures. Each warehouse bin now had only one product type in it, and all bins had bar code labels so wireless scanning devices could track inventory. The warehouse was divided into new zones, which sped up the shipping process for orders that didn’t need any extra handling.

Instead of bludgeoning its way to the finish line, Dorfman Pacific was able to pull back when other companies might have pressed on. “We were able to stop and catch our breath, and work through the issues and flows,” Dulle says.

Enjoy the Fruits of Your Labor

Almost two years later, the vision of a wireless warehouse is a reality. Workers now take advantage of wireless networking, handhelds and scanners, bar codes, and streamlined shipping and receiving procedures. All product inventory is seamlessly tracked and there’s not much paper floating around the warehouse. “As far as paper to manage inventory, we don’t have it,” Dulle says.

He won’t say what the total project cost but notes the company is looking out three years for the return on its investment. Meanwhile, three peak seasons have come and gone using the new system, and executives are happy with the results. Dorfman Pacific now handles approximately double the number of orders during its peak periods and has sliced labor costs by nearly 30 percent in the warehouse.

“We had a significant increase in [shipments] during the last peak season, and we handled it with less people,” Dulle says. “We can take market share from competitors because we can deliver faster now.” **CIO**

Going Wireless

New wireless networks and devices can create more productive work environments. But they can also generate anxiety. Read **UNTETHERED BUT NOT DISCONNECTED** at www.cio.com/081506 to learn how four companies cut the wires and still managed to keep their employees feeling connected.

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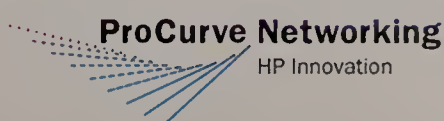


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Do You Love Your BlackBerry Too Much?

Take this quiz and find out.

*Answers at the bottom of the page

1. According to Reuters, how fast did 16-year-old Ang Chuang type a 160-character text message to set the world record for fastest texting?

- (A) 1 minute, 25 seconds
- (B) 1 minute, 1 second
- (C) 42 seconds
- (D) 21 seconds

2. What was Chuang's "trick" to speedy texting?

- (A) Daily finger exercises.
- (B) Using fingers and thumbs simultaneously.
- (C) Memorizing the keypad.
- (D) Using a phone with big keys.

3. Which of the following is not a real quote from a news story about BlackBerry use?

- (A) "BlackBerry e-mail devices can be so addictive that owners may need to be weaned off them with treatment similar to that given to drug users, experts warned today."

(B) "A management expert is warning corporations to gird themselves for a potentially costly wave of lawsuits from employees claiming they are addicted to 'crackberries.'"

(C) "The Hyatt Regency Scottsdale Resort and Spa in Scottsdale, Ariz., offers a special BlackBerry Balm Hand Massage that runs \$80 for 30 minutes."

(D) "A yacht broker was fined yesterday for kicking and punching a building company director who put his £700 personal organizer into a pint of beer."

4. What was the court's sentence for the teen who killed a bicyclist when he was DWT (driving while texting)?

- (A) Life in prison
- (B) 10 years in prison
- (C) 9 days in prison
- (D) Community service

5. True or false? This is the only reported death in connection with DWT.



6. Britney Spears

7. Reese Witherspoon

8. Naomi Campbell

9. Tori Spelling

Match the celebrities to the BlackBerry incident:

- (A) Allegedly attacked assistant with bejewelled BlackBerry.
- (B) Divorce allegedly spurred by love letters found on spouse's BlackBerry.
- (C) Learned of father's death via BlackBerry.
- (D) Served notice to spouse of divorce papers being filed via BlackBerry.

10. According to an anonymous posting on a BlackBerry addicts' confession page, "BlackBerry is..."

(A) "...the best invention ever."

(B) "...the key to higher profits and productivity. When will they become mandatory in business?"

(C) "...a scourge on my life, my family and my sanity."

(D) "...a lifeline to love, work, knowledge, friendship and experience. Who wouldn't be addicted?"

How'd You Do?

1-3 correct:
Clean and sober

4-7 correct:
Experimenting

8-10 correct:
Get help. Please.

Answers: 1. c; 2. d; 3. Trick question; they are all real. 4. c; 5. False. Deaths have also been reported in England, Australia, New Zealand, Malaysia and Switzerland, according to the San Jose Mercury News. 6. b; 7. a; 8. c; 9. d; 10. d

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